

AMATEUR RADIO

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

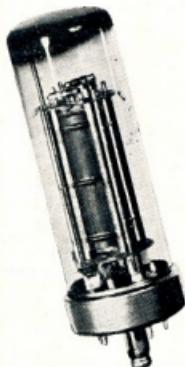
FEBRUARY

1950

Now Arrived . . .

A New Quick Heating Valve
for Mobile Services

PHILIPS QQCO4/15



The new Philips Double Tetrode type QQCO4/15 combines compactness, stability, and maximum output at 186 Mc/s.

ECONOMY OF OPERATION makes this valve ideal for use in mobile equipment. The directly heated filament requires only 6.3 volts at 0.68 amperes.

An important departure from the conventional type of double tetrode is that the anodes are brought out at the base and not at the top of the bulb. This feature facilitates wiring and allows a better orientation of components.

TYPICAL RATINGS FOR CONTINUOUS SERVICE

Frequency	186 Mc/s.	Screen voltage	200 V.
Anode voltage	400 V.	Screen current	8 mA.
Anode current	2 x 30 mA.	Bias	-80 V.
Watts output	19.5 W. (Two systems in p.p.)		

Available Next Month—the **QQEO6/40**

Philips also has pleasure in announcing the development of a new double tetrode of advanced scientific construction. The QQEO6/40 has an output of 80 watts (approx.) at 300 Mc/s. This valve can also be operated with an output of 30 watts (approx.) up to 375 Mc/s.

PHILIPS ELECTRICAL INDUSTRIES OF AUSTRALIA PTY. LTD.

SYDNEY

• MELBOURNE

• BRISBANE

• ADELAIDE

• PERTH



FOR THE EXPERIMENTER & RADIO ENTHUSIAST

9D.

Registered at G.P.O., Melbourne, for transmission by post as a periodical.

"HAM" RADIO SUPPLIERS

5A Melville Street, Hawthorn, Victoria

PHONE: HAWTHORN 4465

PHONE: HAWTHORN 4465

BARGAINS — BARGAINS — BARGAINS

BC348, Single Ended Valves. Complete with Power Supply, Crystal Filter, 200 Kc. to 18 Mc. Excellent condition £35.

Eddystone "640" Receiver, complete with Speaker, Power Supply and Instruction Book. One only £55.

Brand new dual Audio Units. Containing two 12A6s in grey crackle finished containers. These units offer many purposes. Pre-Amplifiers, Inter-Communication Units or for wrecking. Units are mounted on rubber stands. £5/-.

English Transceivers, frequency unknown. Nine Valves including one EF50, one VT501, one EL32, two EF39, one EK32, one EBC33, two EF36. Chock full of useful parts, relays, genemotor, etc. £6 each.

American Transceivers, Hi-Frequency LF.F. Tube line-up: three 7193s, seven 6SH7s, three 6H6s, four Relays, less Genemotor £5.

SPECIAL

English I.F.F. Units. Tube line-up: two VR135 (high freq. triodes), two VR78 (diodes), four VR65A, Eddystone Butterly Condenser, 1 uF. 1,000 v.w. Block Condenser, Genemotor 11-12 v. input at 3.8 Amp., output 480 v. 40 Ma. Good assorted quantity of Resistors and Condensers, ideal for wrecking, condition as new £2 each.

High Frequency Receiver, Australian AR301, uses three 954s, one 995. Six 6AC7 LF. Stages at 30 Mc. Easily converted to 144 Mc. £10 each.

Prop. Motors, suitable for beams, 28 volts input £5

American type SCR52233, band coverage 2 to 9 Mc., plug-in coils. Modulator incorporated. Two 6N7, one VR150, one 1625, two 815s. Easily modified for other bands. Price £12/10/-.

American TA12D four-bands; 12SK7 v.f.o. each band, 807 doubler, two 807s in final, less Modulator. £17/10/-.

American type BC375E Transmitter, phone and c.w. Four 211s, one VT25A, including three meters. Modulator chock full of useful parts. Less coil boxes £9/10/-.

AT5 Transmitters, no valves or meter, slightly damaged and suitable for wrecking, plenty of useful parts £3.

Cathode Ray Indicators, American type CPR55ABB. Valve line up: one 5BP1, four 6AC7s, three 6H6s; in metal case, easily converted to C.R.O. Price £8/10/-.

American R1/ARR1, band coverage 234-258 Mc. Contains three 954 valves, resistors, etc. Slug tuned. In black crackle case. Price £3/10/-.

American Radio Beacon Receivers, contains one 12C8, one 12SQ7, low current milliamp. relay. In small metal case. Price £2.

Interphone Amplifiers, contains 6F8 valve, two transformers, resistors, condensers, etc. £1/10/-.

American Simpson 2 inch 0-150 Ma. Meters, new, £1/2/6.

Weston twin scale, 0-40, 0-120 Ma., 3 terminals, £1/2/6.

English Crystal Diodes £10/6 each.

SPECIAL

12 foot lengths of $\frac{1}{2}$ inch Co-ax Cable, 72 ohms, with connector both ends £4/6.

American Radar Receiver 400 Mc. Tube line-up: two 955s, six 6AC7s, one 6H6, one 6J5. Slug tuned i.f. channel. Contained in black crackle cabinet. Price £7.

VALVES, Tested, Out of Disposals Gear

10/- each — 7/6 each —

2C26	954	2X2	12C8
6A6	955	879	12SK7
6AC7	956	6G6	12SJ7
6N7	12A6	12SG7	6B4
6SL7	1626	12AH7	6K7
6X5	1629	12J5	AV11
9003	HY615	6AK5	17/6 each.

6H6 and 6SH7 Valves, Bargain Price 5/- each.

WANTED TO BUY—TYPE 3 MK. II. AND TYPE A MK. III. TRANSCEIVERS

"HAM" RADIO SUPPLIERS

(KEN MILLBOURN, PROP.)

5A Melville Street, Hawthorn, Victoria

(East Kew Tram Passes Corner, opposite Vogue Theatre)

(Phone: Hawthorn 4465)

Please make Money Orders and Postal Notes payable at North Hawthorn Post Office.

AMATEUR RADIO

Published by the Wireless Institute of Australia,
Law Court Chambers, 191 Queen Street,
Melbourne, C.1

EDITOR:

T. D. HOGAN, VK3HX,
Telephone: UM 1732.

MANAGING EDITOR:

J. G. MARSLAND, VK3NY.

TECHNICAL EDITOR:

J. C. DUNCAN, VK3VZ.

ASSISTANT TECHNICAL EDITOR:

A. K. HEAD, VK3AKZ.

COMPILATION:

R. W. HIGGINBOTHAM, VK3RN.

LIAISON:

I. K. SEWELL, VK3IK.

CIRCULATION:

S. I. ZEUNERT, VK3SZ.

ADVERTISING REPRESENTATIVE FOR VICTORIA:

W. J. LEWIS,
20 Queen St., Melbourne, C.1.
Telephone: MU 5154.

ADVERTISING REPRESENTATIVE FOR N.S.W. AND QUEENSLAND:

L. W. CRANCH,
Room 302, 17 Bond St., Sydney.
Telephone: BU 3879.

PRINTERS:

"RICHMOND CHRONICLE,"
Shakespeare St., Richmond, E.1.
Telephone: JB 2419.

MSS. and Magazine Correspondence should be forwarded to the Editor, "Amateur Radio," Law Court Chambers, 191 Queen St., Melbourne, C.1, on or before the 8th of each month.

Subscription rate in Australia is 9/- per annum, in advance (post paid) and A10/6 in all other countries.

Wireless Institute of Australia (Victorian Division) Rooms' Telephone is FJ 6997.

EDITORIAL



T.V.I.

With television just around the corner, workers in our chosen field will experience a decided tightening of the conditions under which we will operate without causing interference to the new art. At this stage of the game, most of us have had perforce to study harmonic suppression in some degree to keep the household b.c.l. set trouble free.

But with the possibility of t.v.i. on top of this the onus will be very much on the Amateur to put only a non-interfering signal on the air.

He will lose the oft used excuse of the antiquated b.c.l. set, for if television in Australia takes up at the present state of development in Britain, local manufacturers will be turning out reasonably high quality gear from the start, capable of giving optimum results only with re-

ceiving conditions at their best. The situation seems to call for extensive research by the t.v. manufacturers, and those specially appointed technical committees who have for some years been studying and eliminating electrical interference.

The Government would be wise to co-opt these committees at this early stage and publish findings for the information and use of all potential creators of QRM including the licensed Amateur.

Only by such co-operation will we retain sufficient "arm room" to use the bands for our experimental purposes as we are entitled to, without becoming involved in the troublesome task of finding our own way out of difficulties which could, with reasonable knowledge and precaution, be avoided.

-P. E.

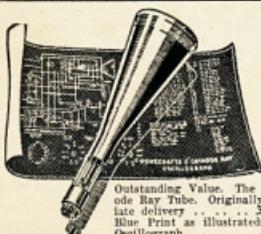
The Contents . . .

De Luxe Vacuum-Tube Voltmeter, Part II.	3	Fifty Megacycles and Above	10
19th Federal Convention Action on Motions Carried	9	Abstracts from Overseas Magazines	12
Ionospheric Predictions for the Amateur Bands	9	1950 R.E.F. Contest	12
		Federal, QSL, and Divisional Notes	13
		Correspondence	20

Honecrafts

PTY. LTD.

GREATEST
BARGAINS
LARGEST STOCK



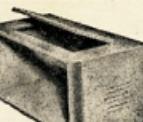
BUILD
YOUR OWN
DE LUXE
OSCILLO-
GRAPH

Outstanding Value. The famous 5BP1 Cathode Ray Tube. Originally cost £15. Immediate delivery **37/6** plus Sales Tax. Blue Print as illustrated to build De Luxe Oscillograph **1/6**

Sockets for 5BP1 Tube, 9/6 each.

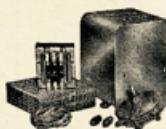
Cathode Ray Oscillograph Cabinets. Black Crackle Finish Steel Drilled Cabinets and Chassis complete with brackets. As illustrated **84/7/6**.

Power Transformer for 5 in. Cathode Ray Oscillograph. Price 99/-.



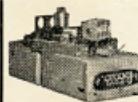
STEEL INSTRUMENT
CABINETS

Finished in grey crackle finish as illustrated. Small 7-in. high, 11-in. long, 5-5/8-in. deep, 60/- Large 10-5/8-in. high, 22-in. long, 11-in. deep, **60/-**



BATTERY CHARGER KIT

Honecrafts 6 volt 4 amp. Battery Charger Kit. Kit includes 6 volt 4 amp. English selenium rectifier, transformer, black crackle finish metal case, 2 terminals, and hook-up wire. Complete kit as illustrated, only **44/10/-**. 12 volt 2 amp. kit 5/- extra.



KAR SET

Radio and Hobbies' Car Radio Kit, as described in May issue of Radio and Hobbies. Honecrafts offer this kit complete to the radio and bolt. Price as illustrated. Sales Tax.



KNOBS

Bargain Radio Knobs, Large size, radio knobs, **4/6** dozen.



Capitol Indicator Plates.

Metal plates, large type. As illustrated, 1/6 each. Small types, as illustrated, 6d. each.



ELECTRIC GRAMO MOTOR

Electric Gramo Motor Bargain. Brand new synchronous electric gramo motors. Play 10 in. 78 in. records. Constant speed, 78 r.p.m., only **59/6**.



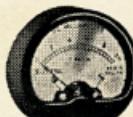
TORCH BARGAIN

Five cell focusing torches. All chrome finish. Case with globe only **19/11**. Batteries 3/9 extra.



MIDGET TUNING
CONDENSERS

Bargain Midget Tuning Condensers, two gang with trimmers. Reduced from 28/- to **19/11**. Three gang with trimmers, reduced from 24/- to **12/11**.



WHILE THEY LAST

English Meters made by Metropolitan Vickers, 0-1 milliamperes, moving coil meters, 2 in. scale. Brand new, in original carton, only **29/6**.



TEST PROBES

Available in pairs, red and with chromium black. Insulated brass probes, per pair, 2/9 as illustrated.

DISPOSAL VALVE BARGAINS — AVAILABLE FOR IMMEDIATE DELIVERY

Type EE250. High Gain RF Pentode. 6.3v. 15/	Type 8P2 4 volt Cossor screened pentode. 14/-
Type EA50 6.3v. VHF Diode, suitable for Vacuum Tube Voltmeter Test Probes 16/-	Type 5BP1 6.3v. Octode Ray 37/6 plus Sales Tax Deflection
Type 954 6.3v. Det. Amp. Pentode 16/-	Type 7C7 Triple Grid 6.3v. 8-pin lock-in. Price 16/-
As illustrated 16/-	Type 2X2 High Vacuum Rectifier 4-pin 16/6
Type 954 6.3v. Det. Amp. Osc. Acorn Base 16/-	Type 8A 7.5v. 4-pin Power Amplifier. Price 30/-
As illustrated 16/-	Type 8PSH 10v. 4-pin Power Amplifier. Price 16/-
Type TAG Twin Diode 16/-	Type 211 10v. Jumbo, 4-pin Power Triode 28/3
Type 807 Beam Power Amplifier 16/-	Type 830B 10v. Triode 60 Watt 25/-

ALL PRICES INCLUDE EXCISE.

COUNTRY AND INTERSTATE
CLIENTS PLEASE ADD
FREIGHT OR POSTAGE.

JUMBO TYPE VALVE
SOCKETS

Brass Extension Shafts.
1/4 in. As illustrated, 10d. each.

DISPOSAL VALVE BARGAINS — AVAILABLE FOR IMMEDIATE DELIVERY

Type EE250. High Gain RF Pentode. 6.3v. 15/	Type 8P2 4 volt Cossor screened pentode. 14/-
Type EA50 6.3v. VHF Diode, suitable for Vacuum Tube Voltmeter Test Probes 16/-	Type 5BP1 6.3v. Octode Ray 37/6 plus Sales Tax Deflection
Type 954 6.3v. Det. Amp. Pentode 16/-	Type 7C7 Triple Grid 6.3v. 8-pin lock-in. Price 16/-
As illustrated 16/-	Type 2X2 High Vacuum Rectifier 4-pin 16/6
Type 954 6.3v. Det. Amp. Osc. Acorn Base 16/-	Type 8A 7.5v. 4-pin Power Amplifier. Price 30/-
As illustrated 16/-	Type 8PSH 10v. 4-pin Power Amplifier. Price 16/-
Type TAG Twin Diode 16/-	Type 211 10v. Jumbo, 4-pin Power Triode 28/3
Type 807 Beam Power Amplifier 16/-	Type 830B 10v. Triode 60 Watt 25/-

ALL PRICES INCLUDE EXCISE.

JUMBO TYPE VALVE
SOCKETS

Suitable for 211E etc.
As illustrated, 20/- ea.

290 LONSDALE STREET, MELBOURNE

Central 4311

A De Luxe Vacuum-Tube Voltmeter

PART II.

After reading the theoretical development of the v.t.v.m. in the last issue, we now turn to the practical problems associated with the construction of an instrument of this type, suitable for the parts readily available in Australia.

Let us study the circuit diagram of Fig. 1. In dotted lines at the upper left is the r.f. probe, the entire EA50 rectifier of the instrument, together with its r.f. input capacitor, C1, a.c. load resistor, R1, and filter capacitor, C2. For low-frequency operation, C1 is dropped out and C3 picked up through suitable contacts actuated when the probe is pushed into the instrument. Rectifier-developed contact-potential is balanced out by the second EA50 and switch S-2C. The desired balance potential is selected from the resistor stick consisting of R2, R3, R4, and R5. Since this is required only in a.c. operation, the function switch head, S-1A, either includes or omits it from the grid circuit of the lower balancing section of the 6SN7GT cathode-follower.

Switch S-1F switches the "high" input jack about for desired functions, while the 30 megohm resistor pairs, R6 and R7, provide the 2.5 voltage multiplier for the six d.c. ranges of 7.5 through 3,000 volts maximum at the 3,000 volt panel jack. Switches S-1E and S-1F switch the a.c. rectifier output and the d.c. input to the top of the range stick, R8 through R13 with the desired range selected by the range switches S2.

Since it is not desirable to have the primary cathode follower always to have its grid connected to S-2B, switch S-1B is arranged to disconnect it therefrom for resistance measurements, or to ground it for current measurements. The range head switch S-2D selects suitable resistors, R14 through R19, for the six resistance ranges and connects the dry battery B.

R20 and R21 are the two cathode follower load resistors, to the "high" ends of which the grids of the meter-actuating 6SN7GT are connected permanently. The function switches, S-1C and S-1D, shift the meter itself to suit the selected function, and also to serve to reverse polarity for differing d.c. input polarities. The wire wound adjustable resistor R22 is used to set the d.c. voltage ranges on the meter scale, establishing full scale reading for the 3 volt input (or 2.5 volt if chosen), which serves to place all d.c. ranges in proper step.

† Technical Editor, 23 Parkside Avenue, Balwyn, Victoria.

‡ 23a Maude Street, Nth. Balwyn, Vic.

By J. DUNCAN†, VK3VZ, and A. P. THORNTON‡, VK3IY

Switch S-2A selects the different a.c. range-set resistors, R23 through R26, which are required for the several a.c. voltage ranges. Switch head S-2E, in conjunction with resistors R27 through R32 establish the six direct current ranges. R33 is the front panel ohms adjust control, used to set the meter reading to full scale before starting resistance measurements. One setting of the knob serves for all six resistance ranges. The remaining parts have been sufficiently discussed in Part I, with particular reference to Fig. 6 as to necessitate no further definition.

There is one other point. This instrument is literally self-testing. By means of its voltage functions, every internal operating voltage may be measured by the v.t.v.m. itself. Likewise the values of the voltage divider stick resistors, contact potential balance and current-range resistors may be measured by the vacuum-tube voltmeter. In practical fact, only the resistance-range resistors may not be measured without another separate instrument.

The first major difficulty is the range resistors, which must be of $\pm 1\%$ tolerance. Resistances of this tolerance are

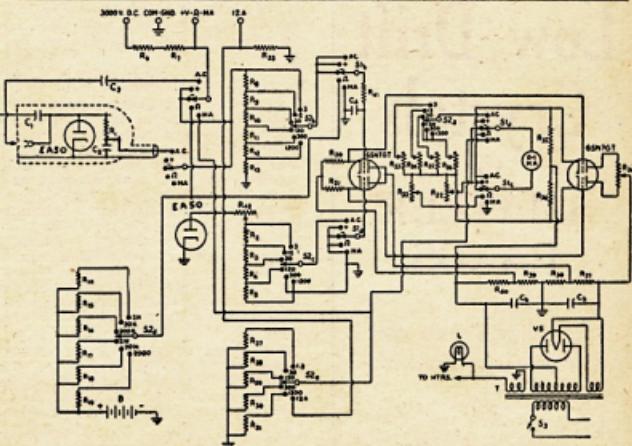


Fig. 1.—Circuit diagram of the Vacuum Tube Voltmeter. With the new setting of R22 to give 2.5 volts full scale, the voltage ranges would become 2.5, 10, 25, 100, 250, and 1,000 volts as mentioned in the text. The 9006s are changed to EA50s, and the altered resistance values are given in the parts list.

C1—0.0005 μ F. mica.
C2—0.002 μ F. mica.
C3—Three 0.1 μ F. 600v. tubulars in series.
C4—0.005 μ F. mica.
C5, C6—8 μ F. electrolytics.
R1—16 megohms 5% tolerance. (Must be small, in r.f. probe).
R2—10 meg., $\frac{1}{2}$ watt.
R3—2 meg., $\frac{1}{2}$ watt.
R4—1.75 meg., $\frac{1}{2}$ watt.
R5—0.1 meg., $\frac{1}{2}$ watt.
*R6 + R7—60 meg. for x 2.5 multiplier (10 x 6); or 40 meg. for x 2 multiplier (10 x 4).
*R8—30 meg. (10 + 10 + 10)
*R9—6 meg (5 + 1).
*R10—3 meg.
*R11—0.6 meg.
*R12—0.3 meg.
*R13—0.1 meg.
*R14—10 ohms.
*R15—100 ohms.
*R16—1,000 ohms.
*R17—10,000 ohms.
*R18—100,000 ohms.
*R19—10 meg.
R20, R21, R41—5 meg. 5% tolerance.
R22, R23, R24, R25, R26, R34—2,500 ohm w.w. pots.
R27, R28, R29, R30, R31—0.1 Ma. meter shunts.
R32—Set experimentally to give 10 amp. range.
R33—10,000 ohms w.w. pot.
R35, R36, R37, R40—40,000 ohms 5% tolerance, 2 watts.
R38, R39—4,000 5% tolerance, 1 watt.
S1 a, b, c, d, e, f—Three banks each five position two-pole.
S2—Five banks each five position one pole.
T—250/250 volts at 40 Ma. with two 6.3 v. fil. windings or one 5v. and one 6.3v. winding.
V5—6X5GT.

* Denotes $\pm 1\%$ tolerance.

available from I.R.C. in Sydney, or through the Melbourne distributors, "Australian Engineering Equipment." It is not always possible to obtain them all from stock in Melbourne, but they can be supplied to order after a short wait. The original values were not very helpful, the resistance values of the voltage divider "stick" being 37.5, 7.5, 3.75, 0.75, 0.375, and 0.125 megohms. These values are obviously difficult to make up, and it was decided to alter the value of the range "stick" to obtain more even values, so the overall resistance of the "stick" was reduced slightly from 50 megohms to 40 megohms, which brings the individual resistances to 30, 6, 3, 0.6, 0.3, and 0.1 megohms, all values which are easier to obtain.

Low Drift Crystals

FOR
AMATEUR
BANDS

ACCURACY 0.02% OF
STATED FREQUENCY

3.5 Mc. and 7 Mc.

Unmounted £2 0 0
Mounted £2 10 0

12.5 and 14 Mc. Fundamental
Crystals, "Low Drift,"
Mounted only, £5.

Spot Frequency Crystals
Prices on Application.

Regrinds £1 0 0

THESE PRICES DO NOT
INCLUDE SALES TAX.

MAXWELL HOWDEN
15 CLAREMONT CRES.,
CANTERBURY, E.7,
VICTORIA

The highest value obtainable in the 1% tolerance at the time of building the instrument was 10 megohms, so the value of 30 megohms is made up of three 10 megohm 1 watt resistances in series. The diode load resistor has to be altered to keep the right proportion, and is changed to 16 mgs., made up of a 10, 5, and 1 meg. bank of resistances in series.

It was further decided that the additional terminal which is used to multiply the scale readings should be changed to give a multiplication of 2.

As it was desirable to use a 0-1 milliammeter, and it was simpler to retain the existing 0-1 scale, the fundamental ranges were altered slightly. No alteration to the circuit values or the divider "stick" are entailed, the d.c. resistance range potentiometer R22 being adjusted so that full scale deflection is 2.5 volts instead of 3 volts as originally. The voltage ranges then become 0-2.5v., 10v., 25v., 100v., 250v., and 1,000 volts, and by using the extra terminal we have additional ranges of 0-5v., 50v., 200v., 500v., and 2,000 volts. Note how these ranges fit in between the main ranges.

In practice, the existing scale of the meter is given some additional figures against the 0 to 1 scale and is marked 0-25 under the existing calibrations. It may be possible to obtain a 0-1 milliammeter with this scale marking as it is the standard marking for a millimeter scale. An additional calibrated range is required for the 0.25v. a.c. range only, as this range is not quite linear. If approximate readings can be tolerated, the main range can be used, but for accurate work it will be necessary to hand calibrate against another meter, any a.c. meter with a low voltage scale would be suitable.

The ohms range is easily obtained, either by calibrating against an ohmmeter, or alternatively, by using the 0-1 scale, and by calculation, enough points can be obtained to plot in the

complete ohms scale. A list of calibration points in terms of the 0-1 scale is appended.

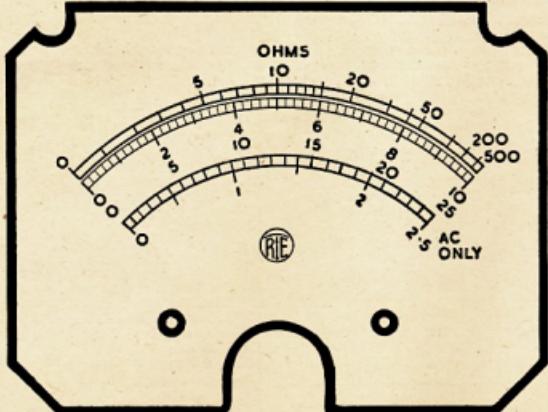
Another advantage in using the existing 0-1 Ma. scale is the fact that standard shunts can be used for the milliampere ranges.

If it is decided to utilise the original idea of hand calibrating all scales and using the 0-3v. as the fundamental, it is advisable to retain the original scale multiplier, and multiply the scales by 2 $\frac{1}{2}$, in which case the terminal resistance R6 + R7 would be 60 megohms (six 10 meg. in series).

After all it is merely a matter of choice which set of scale ranges are used, personally the writer preferred the 0-2.5 volt fundamental range in preference to the 0.3 volt, because it was felt that scale calibration could be simplified. The two main advantages of using the 3 volt range, are firstly, a 3 volt battery can be used to set the full scale adjustment for the d.c. ranges, and secondly the maximum voltage which can be measured by the instrument is increased, as with the aid of multiplier, voltages can be read to 3,000, as against 2,000 volts with the other scale. The switches in Fig. 1 are marked for the fundamental 3 volt range, it will be observed.

The next main problem is the choice of switches, which need to be ceramic, due to the voltages handled, and also to eliminate leakages between switch contacts; the second point being very important when we consider the high value of resistances between some of the resistance "stick" contacts, and also the fact that the high resistance range is capable of measuring well over 200 megohms.

The function switch consists of three banks of 5 x 2, which is a standard switch, and is readily available. One bank S-1D and S-1C could be an ordinary bakelite if desired, to reduce the cost. The voltage selector switch has



Full Scale Dial Calibration for University 0-1 Ma. standard square type 4" Meter.

six positions and is therefore a little more difficult to obtain. One possibility is to cut the voltage ranges to five and use a standard switch, but this causes a serious gap in the ohms ranges and is not recommended. The best alternative is to use five banks of twelve contacts, and only use those required. Quite a few six position switches are about however, and no difficulty should be encountered on that score. Two banks S-2E and S-2A could again be in bake-elite.

The only other main alteration in the circuit was the adoption of EA50 diodes in place of the 9006s, this was done because of their lower inter-electrode capacity, and also their smaller physical size, important when designing the r.f. probe. The changing of these valves brought about a change in the values of the diode balancing resistors, and it is advisable to place them in an accessible position so that they can be altered if necessary. The method is simple. Set the v.t.v.m. to a.c. and switch to the 1,000 volt range, adjust the zero set to give zero on the meter scale, which will coincide with the d.c. zero, and then move the range switch progressively towards the 2.5 volt range, checking the position of the meter needle to see that it coincides with the zero point at each setting. If it varies on any range the resistance below the tapping point will need alteration. If the needle is above the zero point the resistance will need to be increased, and visa versa. On the 2.5 volt range the zero adjustment is done by the potentiometer R42, which should give a reasonable variation above and below the zero point. If it does not do this, change the value of R2. Naturally these adjustments must be made with the r.f. probe in circuit as we are balancing one diode current against the other.

One other alteration was found necessary to the circuit, and that was the use of a separate filament winding for the cathode follower. This was due to the fact that the cathode resistance is 5 megohms, which is virtually between the cathode and filament of the 6SN7GT and it was necessary to supply this valve from the spare 5 volt filament winding on the transformer, which gave quite adequate voltage, and also enabled the winding to be left floating above ground, thereby removing the chances of cathode to heater leakage, with some 6SN7GT.

The remainder of the circuit is quite straightforward, and needs little comment, the only point to remember being that we are dealing with two balanced circuits in the two 6SN7s and therefore any lack of balance in the two opposite halves of the circuit will result in a position arising where it is impossible to zero set the meter. To overcome this see that the two 40,000 cathode resistors in the cathode circuits of the 6SN7 meter tube are of the same value, it is more essential for them to be the same value than exactly 40,000, so select a pair matched on an ohm meter.

The same remarks apply to the balanced voltage divider across the power supply, and in checking with a 1,000 ohm per volt meter on completion, the

voltage between the ends of the two 40,000 ohm resistances should be 175 volts, and across the outer ends of the 4,000 divider resistances 12 volts, and measured to ground, -87½ volts, +87½ volts, -6 volts, and +6 volts, respectively. It is not essential to have these

exact voltages, as long as the two halves of the divider balance.

If all resistances and voltages are balanced, the meter should read zero with the "zero set" control at about mid scale.

ADJUSTMENT

D.C. Ranges.—Turn the function switch to d.c. plus and the range selector to the 2.5 volt range, adjust the "zero set" control for zero on the scale. Connect a fresh 1.5 volt battery to the leads and adjust potentiometer R22 for correct scale reading. All d.c. ranges will now be correct.

Turn the function switch to d.c. minus, reverse the battery, and it should again read 1.5 volts, if not the 6SN7s are not operating on the straight portion of the curve, and the cathode resistances will need checking, however, no trouble was encountered on this score in both models built up.

A.C. Ranges.—Switch the function switch to a.c. and the range selector to 2.5 volts. A suitable voltage of 2.5 volts is taken from the filament winding of a transformer through a 600 ohm potentiometer, to give a source of variable voltage, and an a.c. meter connected across the output. The potentiometer R23 is now adjusted to give full scale deflection on the v.t.v.m. The special scale for this range can now be calibrated.

The range selector is then changed to 10 volts, and with a source of 10 volts a.c. from a few filament windings in series, the potentiometer R24 is adjusted for full scale reading.

The same procedure is then adopted for the 25 volt and 100 volt ranges with R25 and R26, it being assumed, of course, that the adjustment of the diode balancing resistances, mentioned previously, had already been carried out. All a.c. measurements and measurements of audio frequencies must be carried out with the external leads, as

OHMS CALIBRATION LISTS

Ohms	3v. Scale	0-1 Ma. Scale
1	0.273	0.091
2	0.5	0.166
3	0.692	0.231
4	0.856	0.285
5	1.0	0.333
6	1.125	0.378
7	1.235	0.412
8	1.335	0.445
9	1.425	0.475
10	1.5	0.5
12	1.636	0.545
14	1.746	0.582
15	1.8	0.6
20	2.0	0.666
25	2.142	0.714
30	2.25	0.75
35	2.335	0.778
40	2.4	0.8
45	2.45	0.817
50	2.5	0.833
60	2.57	0.857
70	2.63	0.876
80	2.665	0.888
90	2.7	0.9
100	2.73	0.91
150	2.81	0.937
200	2.855	0.952
300	2.905	0.968
400	2.928	0.976
500	2.94	0.98

If the 0-1 milliammeter is reasonably linear, the table above will give sufficient accuracy to enable the ohm scale to be plotted in terms of the 3 volt, or original 0-1 scale, whichever is used.

Immediate Delivery!

EDDYSTONE 680

15 VALVE COMMUNICATIONS RECEIVER

THE BIGGEST EDDYSTONE PRODUCTION TO DATE

Write for Details.

AVAILABLE SHORTLY . . .

EDDYSTONE 750-12 VALVE RECEIVER

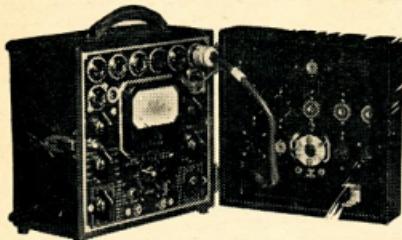
ADVANCE ORDERS TAKE NOW!

WILLIAM WILLIS & CO. PTY. LTD.

428 BOURKE STREET, MELBOURNE, C.1. Phone: MU 2426

VEALLS for all Radio Requirements!

TRANPO VALVE AND CIRCUIT TESTER



The compact and convenient Tester that is not only necessary to Radio Servicemen, but also to Radio Experimenters! Reads milliamperes, D.C. and A.C. volts, output volts and tests resistors, condensers, and valves. Slightly shop soiled. £27/10/- net.

LEXINGTON MOVING COIL PICK-UP

This famous English Pick-up gives performance never before thought possible. Full reproduction of the total audio frequency range. Complete with transformer, screening box and sapphire needle. Price: 12 Inch, £7/19/6.

JEWEL AUTO-PACK Simple to instal in your car! Operate your Electric Mantel Set from your car battery. Ideal for that camping holiday. 2½ to 4 amp. drain from battery. Price, £9/9/-.

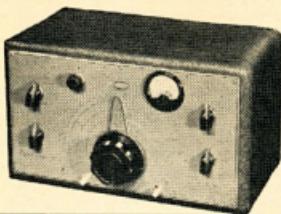
"UNIVERSITY"

S.G.A.

Signal Generator

Frequency 155 Kc. to 110 Mc. Seven Bands! Price £47 (plus 8½% Tax).

FULL RANGE OF
UNIVERSITY TEST GEAR
AVAILABLE



SPECIAL SNAPS!

Famous TEONICO Crystal Pick-Up with permanent built-in sapphire stylus; 84-1. AEGIS Insulated types available. Ham discount! ROLA Speakers: 12R, £11.15/5; 8M, £2.10/7; 6L, £2.1/2. Ham Discount! MAGNAVOX 12 in. Speaker, 362L, £7.37½ oz. magnet, £4/1.7. Ham Discount! AND REMEMBER, VEALLS' QUICK CHASSIS CUTTING SERVICE! Chassis for any circuits or special needs cut promptly and efficiently! Let us quote you for your Ham Receiver, built to your specifications. Best parts available.

VEALLS

243 SWANSTON STREET, MELBOURNE Phone: FJ 3145.
299 CHAPEL STREET, PRAHMAN Phone: LA 1605.
MAIL ORDERS: BOX 2141T, G.P.O., MELBOURNE.
Associated with ARTHUR J. VEALL PTY. LTD.—Est. 1911.

*Tested and...
Tried*

Every transformer looks to be simply coils of wire on a core . . . but the beauty of Trimax transformers is more than skin deep! Long experience and high standards of technical ability ensure that the unseen parts of your Trimax Transformer will prove their reliability in every test.

TRIMAX Transformers

(CLIFF & BUNTING PTY. LTD.) CHARLES STREET, NORTH COBURG

Interstate Representatives—Brisbane: Chandlers Pty. Ltd., Cnr. Albert and Charlotte Streets. Adelaide: C. N. Muller, Worando Bldgs., Grenfell Street, Perth: R. D. Benjamin, 197 Murray Street. Tasmania: W. & G. Genders Pty. Ltd., 53 Cameron Street, Launceston. Enquire from your Nearest Supplier.

the r.f. probe has not sufficient series capacity to function below high audio frequencies.

Ohms Range.—Switch the function switch to ohms, and adjust the "ohms set" potentiometer for full scale with the leads open. Connection of a resistance between the leads will cause a reduction in the meter deflection, and the value of the resistance can be read off. Values of resistance from about 0.5 ohm to over 200 megohms can be obtained, depending on the setting of the range selector.

In checking values of resistance above about 100,000, this meter is far superior to the average multimeter. As an example, on the ohms $\times 1$ meg. range, 10 megohms is half scale on the meter.

Milliamperc Ranges.—No explanation is necessary here as the 0-1 milliamperc meter is simply connected to the external terminals and suitable shunts switched across it for the different current ranges. The inclusion of current ranges in the v.t.v.m. is simply to enable the instrument to replace the usual multimeter for bench work.

REVIEW OF USES

Well there it is, and before discussing the practical construction, let us review the unit and its possible uses. Only some of the uses can be reviewed here, as it would require much more space than is available to cover them all.

On d.c. ranges, voltages from 0.2 volt to 2,000 volts at 40 and 80 megohms input resistance, enables us to measure a.v.c. line voltages, grid voltage on oscillators, screen and plate voltages on speech amplifiers simply by placing the test prod on the appropriate point. There are many other applications where it is necessary to use a very high input resistance to obtain accurate results which will occur to the reader, but the ones mentioned above are the main ones in our applications.

To give an idea of the small amount of current drawn from the source of supply in d.c. measurements, the writer found that the voltage of a 4.5 volt battery could be measured quite accurately with the body in series with the test prods.

On a.c. measurements, it would take quite some time to enumerate the many applications this v.t.v.m. has for Amateurs, as it operates from 20 cycles to 100 megacycles, over the range of voltages previously mentioned, but to take a few at random.

All common a.c. measurements at 50 cycles; checking of voltage gain in audio equipment; r.f. operation and amplification; a sensitive neutralisation indicator, etc.

By connecting a small tuned circuit between the probe and its shield it can be used for tracing parasitics and r.f. which has strayed from its proper path. Maybe we should conduct a competition to see who can think up the most uses for this v.t.v.m., but the list could be a very long one.

The ohms scale and the milliamperc ranges don't need any elaboration, but it has surprised the writer on checking

through his stock of resistances, how many of the larger values are open circuited internally. Many were consigned to the w.p.b. that would have caused much grief and woe if they had been used at some later date.

One final point. This meter can be used for reading the mains voltage, but remember the negative terminal on the v.t.v.m. is connected to earth through the 3-pin mains plug, so only use the active lead in reading mains voltages. The fact that the v.t.v.m. is connected to the mains at all times must be remembered, and if it is necessary to measure resistances in a receiver for example, which are above chassis potential, see that the mains plug to the receiver is removed, otherwise the chassis of the v.t.v.m. and the receiver will be connected together through the earth pins on the mains plug which will cause false readings.

If negative voltages have to be read, the a.v.c. line in a receiver for example, the ground side of the v.t.v.m. is connected to the chassis of the receiver and the active prod applied to the a.v.c. line with the function switch on d.c. The marking of the test prods red and black to represent positive and negative is misleading, and if the red prod is considered in all cases as the active lead no confusion will arise.

Whilst on the subject of test prods, there are several points to watch. Firstly it was found necessary to have the active prod lead shielded for measurements of a.c. voltages on the lower ranges, because of the sensitivity to 50 cycle pickup. It was possible to obtain quite a fair deflection on the 2.5 volt range with the test lead lying near a power transformer, so in addition to the normal lead terminal, a co-ax outlet was installed and a shielded lead made up with a piece of co-ax cable. Also as mentioned in the first section of the article, a double ended prod is required, one end having a 2 meg. resistor in series, for measurement of a.v.c. and oscillator voltages without applying any additional capacity to the circuit being measured. This enables a.v.c. voltages to be measured at the grid caps of the i.f. stages in a receiver, without detuning the stages. The addition of the 2 meg. resistance will introduce a slight error, in this case the reading will be 5% low, which can be allowed for mentally.

A commercially built r.f. probe of bakelite construction is available and could be used. It is suggested, however, that the outer barrel be shielded which can be done easily by sticking tinfoil inside the barrel and grounding. The insulation of this probe is only bakelite, and it is doubtful how it would operate at about the 100 megacycle range. If possible a polystyrene bush should be fitted to the probe to overcome that difficulty.

When the probe is not in use it is necessary to have an arrangement whereby the low frequency condenser C3 is connected into circuit. It is important to note that the lead from this condenser to the point of connection in the r.f. probe should be short, and have

as little capacity as possible. Any capacity existing between the diode in the r.f. probe and where the extra capacity lead plug in, is virtually additional capacity across the diode when making measurements, and we are endeavouring to keep this as low as possible. In the construction of the instruments to follow, this point has been taken care of quite nicely.

CONSTRUCTIONAL DETAILS

The first vacuum-tube voltmeter built was entirely conventional in construction, and consisted of a chassis 11" \times 7" \times 2 $\frac{1}{2}$ " deep. The layout of components is shown in Fig. 2 and is self explanatory, the r.f. probe being placed in the inside of the cabinet when not in use. A duplicate miniature 4-pin socket is located on the front panel for use with the r.f. probe.

It is usual for the r.f. probe to be arranged that it can be plugged into the front panel, but it was felt that it would be better to put the r.f. probe in the cabinet to avoid having leads out on the bench which could be in the way.

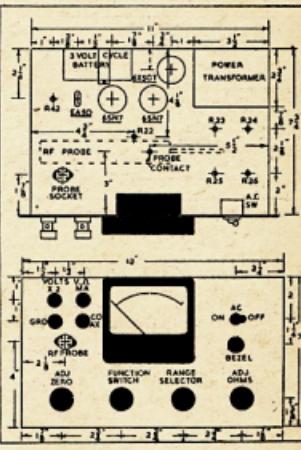


Fig. 2.

It is advisable to make a careful check of the size of components to be used, as there is not a great deal of room to spare.

One of the main difficulties from a space point of view, is the problem of locating all the voltage, diode balancing, and resistance resistors. When it is realised that each resistance shown on the diagram is made up of two 1 watt resistances in series, the space requirements are large. This problem was overcome by constructing several resistance strips of Polystyrene, complete with mounting lugs, and wiring them to the range selector switch with 18 gauge tinned copper wire, so that they are self supporting. The resistances are then wired in place, and the switch bank, complete with resistance strips,

slipped into place, and the necessary connections to the remainder of the circuit made.

In the event of a fault developing in the switch bank or resistance strip, the whole unit can be removed, by unsoldering a few wires.

No details are given of the r.f. probe as it is felt that ideas will differ considerably on this matter, but as a matter of interest, the probe used in this instrument is 6" long and 1" in diameter.

The outer shield is a piece of 1" diameter brass tubing, and inside it is slipped a section of bakelite tubing, which has been split lengthways down the centre. Only one half of this tubing is used, and two circular ends are fitted to it, one of Polystyrene for the probe contact, and the other to take the lead connections.

The components are mounted in this bakelite "trough," and the brass tubing slipped over afterwards. A hole is fitted in its holder on the chassis.

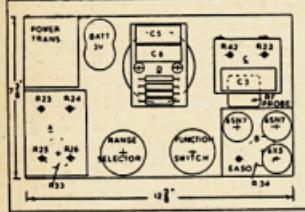


Fig. 3.

ALTERNATIVE LAYOUT

The second vacuum-tube voltmeter was built as shown in the rear view of Fig. 3. Four small sub-panels (A, B, C, and D) were constructed, all except panel B being of insulating material. These panels are mounted on pillars to keep them clear of the front panel components, which in some cases are located underneath. Panel D is supported by the two meter terminals, and carries the electrolytics, C5 and C6, and the voltage divider resistances for the power supply.

The r.f. probe in this case is built into an old i.f. can, and when plugged into the front panel, picks up the connection for C3 on panel C. This panel also supports the d.c. range set resistance and the diode contact potential balancer.

Panel B carries the two 6SN7s, 6X5 rectifier, and EA50 balancing diode. It is mounted sufficiently far from the front panel to clear the zero set resistance R34.

Panel A carries the four a.c. ranges set resistances and is also mounted so that it will clear the ohms set pot. R33.

All main voltage "stick" resistances, ohms, and diode balancing resistances are mounted around the range selector

switch, or if desired, resistance strips can be made up as previously mentioned.

The main circuit wiring is cabled to present a tidy appearance, and it is felt that this method of construction is easier, and more accessible than the first unit built.

It must be stressed that a few of the components vary in size and it is advisable when making up the small panels to make sure they are of sufficient size to take the components on hand.

FORMULA FOR DIFFERENT VALUES OF VOLTAGE "STICK"

For those who want to calculate different values of tappings for the voltage

"stick," the following simple formula will serve.

$$R_s = \frac{R \times V_m}{V}$$

where V = voltage range required at tap.

V_m = Fundamental range of v.t. v.m.

R = Total value of resistance "stick" required.

R_s = Total value of resistance from earth to tap in use.

E.g.—For 1,200 volt tap—

$$\frac{40 \times 3}{1200} = 0.1 \text{ meg. from tap to ground.}$$

Save time and money! Give your Gear the 1950 Look!

PANEL MARKING TRANSFERS NOW AVAILABLE

Designed especially for the Amateur, SERIES ONE consists of a sheet of almost every conceivable name for the shack, communications receiver, transmitter, control panel, etc. These are finished in eighth inch silver modern capitals, and look superb on black or grey panels, smooth or crackle finished. The sheet of nearly 80 costs only 2/11, or less than 1d. each! They are easily applied, and come with full directions.

Nearly Ready—SERIES TWO (Audio, C.R.O., etc.), and SERIES THREE (complete list of Broadcast Stations).

ENQUIRIES WELCOME

AMATEUR RADIO PRODUCTS

46 WARRIGAL RD., SURREY HILLS, E.10, VICTORIA

or from Ham Radio, Collins, Willis, Gerard and Goodman, etc.

Trade Supplies: Direct or through R. H. Cunningham.

DURALUMIN TUBING FOR WIRELESS AERIALS

Stocks Now Available for Immediate Delivery

ALL DIAMETERS $\frac{1}{4}$ " TO $1\frac{1}{4}$ " IN WALL GAUGES 16-18-20

Price List on request.

GUNNERSEN ALLEN METALS PTY. LTD.

67 YARRA BANK ROAD, SOUTH MELBOURNE

Phone MX 4621 (5 lines).

Telegrams: "Metals," Melbourne.

19th Federal Convention Action on Motions Carried

As a result of Agenda item 31 of the 19th Annual Federal Convention, the Federal Executive were directed by Federal Council to publish three months before the next Convention, dated summary of action on motions passed at the previous Convention. In accordance with this motion, the motions which were passed are enumerated below with the action resulting therefrom. Interested members should refer to the June 1949 issue of "A.R." wherein will be found on page 14 the voting and the form of motions.

AGENDA ITEMS

Item 1. VK3WIA has been temporarily operating from VK3UM, mainly keeping schedules weekly with WI4W, and occasional contacts with the R.S.G.B. and the N.Z.A.T.

2. Noted for future policy.

4. Action complete and promulgation of amendment made.

6. Endorsement of previous policy.

7. All Divisions have agreed to an increase in price to 7d. per copy. The Victorian Division, as publishers, send out three-monthly statements of the finances.

8. Adjacent frequencies not agreed to by P.M.G., but permission granted to operate the Emergency Nets on 3501 and 7002 Kc. These frequencies are for practice purposes, but should the occasion warrant, any frequency may be used.

10. Action taken by writing three consecutive Editorials on the subject and in re-publishing from time to time in Federal Notes.

16. The P.M.G. would not consider this suggestion with the great amount of additional work to put it into operation. The two licences are now handled by different Departments.

17. As Federal Executive, contrary to the motion, were not able to supply the P.M.G. with any instances of hardship, they would not agree to the motion. They consider the present system to work very efficiently and have had no complaints from Amateurs.

21. All Divisions with the exception of the N.S.W. Division have appointed observers, but very few reports are to hand from those appointed. The P.M.G. have not been able to take any action with other Administrations so far, as the Provisional Frequency Board is still sitting in Geneva, and channels have not been finalised. Federal Executive, however, are determined to build up a file with the Department, which makes consistent reporting important.

23. Rules for permits contained in Federal Notes elsewhere, but Dept. will not grant privileges to all.

26. This motion, proposed by the W.I.A., is at present before the vote of the member societies of the I.A.R. Copies of the "A.R." are now sent to all member societies, so that results may be copied.

28. Action complete as this Rule was clarified in the 1949 VK-ZL Contest.

31. Action taken.
32. Policy, and noted by Divisional Councils.
33. For the policy book and all future Conventions.

GENERAL BUSINESS ITEMS

Item 1. Rules finalised and published.

2. As the Contest Manager and Contest Committee had extreme difficulty in formulating rules to suit equitably all States in an all band v.h.f. contest, the matter was referred to all Divisions for comments and suggestions which were few and did not solve the problem. As several Intrastate Divisional V.H.F. Contests are in progress, something valuable may be learned from these before an Annual W.I.A. V.H.F. Contest is inaugurated.

3. Conditions set out in 1950 N.F.D. Contest.

4. Has been in operation since the 19th Convention.

5. This was included in 1949 Rules.

7. Publication of bands allotted has been made.

8. The P.M.G. would not agree to this motion from the security angle and monitoring position.

9. Again, as no specific cases could be quoted, the P.M.G. considered the present system to be satisfactory; but would notify their State Superintendents of the correct interpretation of this regulation.

10. This protest has been registered with the P.M.G. and filed.

12. Advice received that the most space available would be every four months. This has been supplied on regulations and other topical matters.

14. All Divisions in favour with exception of Queensland.

16. The P.M.G. did not agree that the A.A.C. should be concerned with such matters, but undoubtedly, unofficial advice would be given if desired. The present system works efficiently and Inspectors are very co-operative.

18. All Divisions agreed to this motion, and it has been noted for future policy.

20. Published in Federal Notes of "A.R."

21. The first draft has been received and is being considered before passing to Divisions for their comments.

22. This motion is the actual amendment to the Federal Constitution and has been promulgated—supercedes Agenda item 4.

25. The 20th Annual Convention will be held in Melbourne at Easter, 1950, the 7th, 8th and 10th April.

Such are the results of the motions of the 19th Annual Convention, and represents some of the work of your Federal Council, in general, and Federal Executive, in particular. We trust the reading of this summary in conjunction with the motions has proved helpful to members, especially those in the country. All motions not shown, of course, were lost or rejected.

—W. T. S. Mitchell, Fed. Sec.

IONOSPHERIC PREDICTIONS FOR THE AMATEUR BANDS

FEBRUARY, 1950

Nine of the charts, prefixed by the letter "C" for Canberra, refer to forecasts for the South-Eastern Australian States. The remainder, prefixed by the letter "P" for Perth, are for Western Australia.

The Canberra charts refer to the following world zones:—

Zone	Region	Terminal
1	Western Europe	London
2	Mediterranean	Cairo
3	N.-West America	San Francisco
3a	N.-East America	New York
4	Central America	Barbados
5	South Africa	Johannesburg
6	Far East	Manila

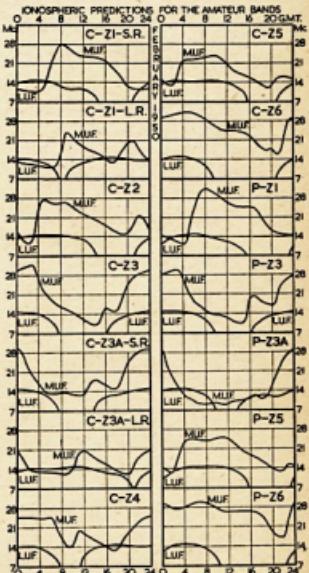
The Perth charts are similar to those based on Canberra.

QUIZ

The Prediction Service welcomes comments on the accuracy of its predictions. In particular, answers to the following questions on the Canberra-San Francisco circuit would be useful:—

1. Were good conditions experienced on 7 Mc. for the period 0800 to 1600 hours GMT?
2. Was the 28 Mc. band workable for a few hours around midnight GMT?
3. Was the 14 Mc. band workable only between 0500 and 1000 hours GMT?

Answers to the Quiz should be sent to the W.I.A. and should, if possible, refer to consistent results obtained on the majority of days in the month.



FIFTY MEGACYCLES AND ABOVE

Compiled by J. K. RIDGWAY, VK3CR.

Good DX conditions, plus the stimulus of the Contest, have made 50 Mc. a very popular band during the past few weeks, but it remains a mystery why a great percentage of stations still use only the first megacycle of the band, with the result that at times it becomes difficult to know whether one is listening on 49 or 50 metres.

Information on the wavelets on 2nd January during the break through from VK4 to VK3, when conditions became almost chaotic at times and many stations were forced to retrace from the running. During this break through VK4, VK3, 3KA and 3LA conducted tests at 50 Mc. with 50 results, indicating that the spurious gus was not confined to the low frequency end of the band only. So what about it chaps? If you cannot spread out a little will you please tune the entire band and give those who operate on 50 metres a chance?

VK4 was now "on location" at Alice Springs and has already contacted VK2, VK3 and VK5 although full details are not yet to hand. The lucky VK3 station was VK8SD who made contact with SJD on 17th January. The contact was on c.w., as SJD had no modulation equipment with him.

HIGHLIGHTS OF THE MONTH

50 Mc.—18th December, 1949: VK2AN/VR2BC; VK2AN/VR2BC; VK2AN/VR2BC; VK2AN/VR2BC; 50 Mc. open from VK3 to VK6 from 1600 to 2230 hours with signals at S9 most of the time. VK7XL/KH9P. Details as yet unknown.

144 Mc.—11th December, 1949: VK3LS on Mt. Bogong to VK3AK at Geelong, a distance of 190 miles.

576 Mc.—13th December, 1949: VK3AN on Mt. Bogong to VK3AK at Geelong, a distance of 90 miles.

50 Mc. ACTIVITY

NEW SOUTH WALES

The band has been practically good with regard to DX openings which are too numerous to mention. Notable are the ZLs and VK6s. Many have worked these now and the strength of VK6 signals has been surprising. Local contacts are normally better, especially when DX indications are very definitely negative.

The 18th December, 1949, was a gala day for ZAH who, after many attempts earlier to contact VR2BC, made an excellent S9 QSO with Graham. It will be remembered that 12 months earlier he used the 1000-1010 ZL metres while Graham built up his transmitter for six. ZWV had excellent QSO and then passed it on after about one hour. He was hearing 2WV S8, but John had a severe power leak which made copy very difficult. There was no contact with VR2BC. During the first break through, ZL102 was also hearing VR2BC and they QSOed.

ZLs have been contacted almost around the clock up to midnight on 4/1/50. Early morning (0600) QSOs were also possible. VK3 to VK2 (Sydney) on the 2nd was a real breakthrough.

The ZL-VK6 contact is further evidence of what can occur. VK6 has worked a S9 QSO with VK3 in the first hour. The most sought after VK is SJD who is operating from Alice Springs, the State required by all for W.A.S.

ZB2, ZADE and ZALS have been heard in Sydney and Katoomba. ZANU, with 4 watts input at Mansfield Brook, a distance of 10 miles, has worked the cross-band with Sydney. Doug made this first contact both ways on 6 and 2 which is very rare. Single 807 on six and three element beam and 832 to 3/8 beam on 2 metres, good work. Doug, 2A9FH and 2XG are both on and working hard. Doug is the owner of his beam and now looks over the hill. Doug worked ZL, 2WH, of Forbes, is being called by DX frequently but so far not heard himself in Sydney.

2A9 (aircraft, mobile) was copied for almost 200 miles while flying at 8,000 feet. The rig is a 812 and 807 with a long trailing antenna. This antenna, by the way, causes a dreadful hash in the receiver and Bob would like to contact anybody who can suggest the reason. This mobile gear is also fitted into the car and gives surprising results. A small ground loop antenna is also used. Used when in motion, this signal can be copied over unbelievable country for 25 miles or so. In cuttings, below line of sight, at the foot of sheer cliffs, and between city buildings. (Eight metres) is the U.S. mobile frequency and will almost go elsewhere.

The following visited the northern boys over the New Year weekend: 2HO, 3WQ, 2WV and 2AH. The visit was enjoyed immensely. Crammed full of radio and only too short. Shacks visited included: 2BZ, 2ADS, 2UF, 2KF, 2XZ, 2ADT, 2VU, 2YH and 2HD! Also en-route: 3AMU, 3OC and 2HUL. Radio under difficulties produces much more versatile Hamas.

They get more out of their gear than the City boys. Some towns have only one Amateur who can't "just call" for assistance. Thanks to the XYLs are also heartily expressed.

VICTORIA

As usual for this time of the year the main source of interest in this band has been the DX which has been regularly breaking through. As far as December is concerned, the skip appeared to be a longer skip, with very numerous openings to VK4 and quite a number to VK6 and ZL. The shorter skip to VK5 and VK2 was almost entirely absent. A summary of DX activity is included as this may be of interest to stations in other States who wish to compare times of openings, etc.

1st of December, 1700-1730 hours: GFC contacted by VK4, VK6, VK3, VK2, VK5, ZL1, ZL2, 1330 VK6s worked by many VKs. 1st: very good signals from VK4, 1100-1600. 16th, 1220-1250: VKs worked signals poor. 1700-1740: ZLs and ZLs worked by VK4, VK6, VK3, VK2, VK5. 19th, 0900-1000: VK4 opened good signals. 20th, 0900-1530: VK4 contacted; 1130-150: VK6s contacted with good signals. 21st, 0900-1930: VK4 opened 23rd, 0830-1120: VK4 opened; 1700-1800: ZLs worked by VK4, VK6, VK3, VK2, VK5. VK4 worked for short periods during the day; 6WV and 6WG worked from 2145-2200. 26th, 27th, and 28th: brief openings to VK4 at various times during day. 29th, 1500-1930: ZL1s, ZL2s, and ZLs contacted. 30th, 0900-0930: VK4 worked 31st: VK4 contacted from 1730 to 1900; VK5 from 1620-1730; VK6s from 1600-2230; VK2s from 1645 to 1745. 1st January, 0800-0900: VK2s worked. 2nd, 1100-1200: VK4 worked by VK6, VK3, VK2, VK5. 1915: very good opening to VK4 with strenuous signals heard this season. 3rd, 1000-1030: VK6 contacted; 1430-1900: ZB2 and VK4s contacted. 4th, 1000-1030: ZLs worked; 1845-1930 and 2100-2130: ZLs worked. 5th, 1000-1030: VK4 contacted. 6th, 0730-0745 and 0845-0915: VK4s worked; 1230-1800: GFC worked. 6th, 1130-1300: VK2s contacted; 1130-1730: VK4 contacted.

On the 2nd of December, 3ACL worked 7XL on extended ground wave transmission, the distance being 190 miles, a S9 QSO was made in this way. This evening, 7XL also heard 3RR in Melbourne, approx. 230 miles. On several other days since, 7XL has been heard weakly by 3XA, but conditions do not seem to have peaked as well as on the first occasion.

Conditions for work with country stations have been good most evenings and many interesting con-

tacts have been made; even during daytime hours good signals have been received from SU1 and 3APF on many occasions. 3ZD, of Warragul, is the band specialist with his new rig and converter, the former being a 6L6 and the latter a 6L6 doublet, modulated by 807s in ABL, and 6BA6 2nd, and 6BE6 mixer. Ron is putting a good signal into Melbourne and working plenty of DX.

TASMANIA

Visitor to the South at time of writing is Len Crooks, VK7XL, who passes on the information that VK7XL has collected the jackpot in the form of KJ16P and VK6WG. No further information to hand re this, but tentative congratulations George. 7ZL was the first to make contact on 4/12/49 when 7AD and 7ZL contacted 4XN. Openings were still continuing on the 10th. What was thought to be on 14th was 2ARG flying over Bass Strait at 8,000 ft. Worked 7XL and 7AB. 2ARG contacted 7AJ on short wave airborne to Hobart. Unfortunately 7AJ could not stay on for long.

On 15th of Dec., 1700, VK6, VK5 and VK4 were heard until 1830. The next evening saw 7ZL and 7BQ getting amongst the VKs, but between them working 11 stations. VK4s were heard at same time, but worked quickly. The same night 7XK heard 6WG, and 7ZL again. On 17th, 0900-1000: VK6 and 7BQ were called by 4B7 but they did not respond. It was noted that 7ZL shifted from 8.6 to 50.3 Mc. On morning of 18th, 17XL, 7AB, 7ZL, and 7BQ worked into VK5 and VK4.

On 19th, 0900-1000: VK4s worked, place as 7AB and 7XL have both been heard in Launceston. 7WV made his debut on 25th with S32 in p.m. At 1653 on 27th December, ZL4s and ZL1s were audible until 1830. 7FF contacted ZL1E and 7BQ/L4CN. A short time later 7ZL was heard with no response.

In South, first known opening occurred on the 10/12/49, when 7DH worked 4B7. 4B7 has the most consistent sit here. Usually first in and still there when the rest have dived back into the noise.

Then there was 7AH, 7ZL, 7BQ, 7ZL, 7AB, 7ZL, 7D, and 7BQ, while 7ZL was worked on 7DH at 1100. At 1117, 4B7 pushed hole in the noise closely followed by other VKs and 2A. Remained open until 1235. At 1350, 4XN heralded the appearance of VK4s again. 7ZL was heard again. 7WV were solid. 7AJ had to attend W.I.A. Council Meeting that night, so 7DH had to hand to himself. 7WV were worked between 2000 and 2215. 7CW came on for whilst, but was confined to c.w. 4B7 was heard on 17th, 17XL, 7AB, 7ZL, 7BQ, 7AJ reports opening to VK4-2 on 17th and 18th. 7AB went flat until 27th when 7AJ heard and worked ZL1, 2, 4.

On 29th, 7AB was fortunate in hearing what he considered to be the best VK7-ZL opening in last two years. This occurred at 1700 hours to ZL1, 2, 4. Altogether Athol worked 14 ZL stations

(Continued on Page 12)

HAMS—TAKE NOTICE!

Prices Include Tax.

Mullard EF39 Valves—New	15/6
Belling Lee "Eliminoise" Aerial System (complete)	£10/16/8
Belling Lee Transmitting and Receiving Aerial Kit	65/-
Few only Taylor T21 Valves (American)	22/6
Scope Six-Second Soldering Irons	43/6
English Ceramic 832 Valve Sockets, silver plated contacts	14/6
Sheets of 70 Silver Panel Transfers	2/11
Limited quantity of American Ceramic Strain Insulators	3/6
The "Randall" Interpolator for use with Bendix BC221 series Frequency Meters. Especially calibrated to interpolate for the 80, 40, 20, and 10 metre Amateur Bands	7/6
Few only Ferranti 0-500 microammeters with Luminised Dial	£2/2/6
Mazda No. 1483 6 volt 0.04 ampere (40 Ma.) Lamps. Ideal for Crystal Oscillator safety fuses	1/6
American Tung-Sol 6515 Miniature Tubes	18/6
Blank Chassis with brackets, front panel, and chrome handles. Grey wrinkle finish. Price, blank, 42/6. Stamped to suit "A. & R." Modulator, 52/-.	22/6
Belling Lee type L336 Twin Feeder Cable. 80 ohms surge impedance, calculated losses for 65 feet at 10 Mc., 0.976 db; 45 Mc., 2.08 db; 100 Mc., 3.25 db, per yard, 1/-, 65 foot coil, 18/10.	3/6
Belling Lee 70 ohm Co-axial Cable, type L600	per yard, 2/-
Belling Lee 70 ohm Twin Co-axial Cable, type L1221	per yard, 2/5
Amphenol Steatite 5-Pin Sockets	3/6
I.R.C. 15,000 Ohm 50 Watt Adjustable Voltage Dividers	4/6
Don't forget, we keep a full range if Eddystone components and "A. & R." Audio, Power and Auto Transformers. Write for details. Advance orders taken now for the Eddystone model 750 Receiver.	

WILLIAM WILLIS & CO. PTY. LTD.

428 BOURKE STREET, MELBOURNE, C.1

Phone: MU2426

Heralding

THE GREATEST AMATEUR
COMMUNICATIONS RECEIVER
OF ALL TIME . . . the

EDDYSTONE "750"

The "750" is a magnificent model—an entirely new, ultra-modern Amateur Bands Receiver with a host of outstanding features. It is the successor to the famous "640"—thousands of which are in use the world over, including the U.S.A.

Featuring:—

- Coverage 480 Kc/s. to 30.5 Mc/s.
- 200:1 ratio dial reduction.
- Modern miniature valves.
- Three watts of audio.
- Double detection super-heterodyne (1,600 and 85 Kc/s.).
- Stabilised H.T. supply.
- Provision for external S meter.
- Variable selectivity I.F.'s.
- New and improved dial provides ample band spread on Amateur Frequencies.

AVAILABLE EARLY 1950

Place your order NOW with your Distributor



Further details from:

- VICTORIA: J. H. MAGRATH & CO., 208 Little Lonsdale Street, Melbourne.
- WILLIAM WILLIS & CO., 428 Bourke Street, Melbourne.
- N.S.W.: JOHN MARTIN PTY. LTD., 116-118 Clarence Street, Sydney.
- QUEENSLAND: CHANDLERS PTY. LTD., Corner Albert and Charlotte Streets, Brisbane.
- WESTERN AUSTRALIA: CARLYLE & CO. LTD., Hay Street, Perth, and 397 Hannan Street, Kalgoorlie.
- ATKINS (W.A.) LTD., 894 Hay Street, Perth.
- SOUTH AUST.: GERARD & GOODMAN LTD., 192-196 Rundle Street, Adelaide.
- TASMANIA: W. & G. GENDERS PTY. LTD., 53 Cameron Street, Launceston, and Liverpool Street, Hobart.
- LAWRENCE & HANSON (ELECTRICAL) PTY. LTD., 120 Collins Street, Hobart.
- NOYES BROS. LTD., 36 Argyle Street, Hobart.

Australian Factory Representatives: R. H. Cunningham & Co., 62 Stanhope St., Malvern, Vic. (UY 6274)

BELLING LEE

This is one of the famous old British names in radio and one that you have seen frequently advertised in English journals and therefore requires no introduction from us.

It is our policy to bring to the amateur and professional radio field in Australia only quality products in which an investment means a financial saving and an insurance of faithful and efficient performance. For this reason we are proud to mention a few of the good things made by Belling & Lee Ltd. They are obtainable from all good Eddystone distributors throughout Australia.

AERIALS.—The SKYROD anti-interference aerial is 18 feet in length, made in five sections and is complete with fittings for lashing to a chimney or to a mast head. Erected on a chimney or mast, this aerial is well free of man-made interference and vastly improves the signal-to-noise ratio.

"ELIMINOISE" is the name given by Belling Lee to a system of extremely efficient transformers and feeder cables for the eradication of noise. A complete kit is available for use with horizontal dipoles or the SKYROD vertical aerial. The kit consists of the aerial transformer L306, which is mounted right at the aerial feed point. This unit possesses a balanced RF transformer complete with Faraday screen between windings for the reduction of capacitive pick-up. The receiver "ELIMINOISE" (L307), which is mounted right at the receiver input terminals, is a similarly made RF transformer and is balanced to respond evenly over the 10-50 metre and the 200-2000 metre bands.

L1221 feeder is a 60 to 75 ohm balanced twin shielded RF cable used in conjunction with L306 and L307 above. No pick-up of noise can occur between the aerial and the receiver with this polythene insulated and screened with copper mesh type of cable.

The Belling & Lee aerial systems are available as either complete kits or may be purchased as components as desired. Noise reduction of 10 db or better is possible with the "ELIMINOISE" system and the automatic balancing of impedances adds further gain to any communication receiver.

—R. H. CUNNINGHAM AND COMPANY, MELBOURNE.

FEDERAL, QSL, and



DIVISIONAL NOTES

Federal President: W. R. Gronow, VK3WG; Federal Secretary: W. T. S. Mitchell, VK3JUM, Box 2611W, G.P.O., Melbourne.

NEW SOUTH WALES

Secretary—Geo. Cameron (VK2GC), Box 1784, G.P.O., Sydney.

Meeting Night—Fourth Friday of each month at Science House, Corner Gloucester and Essex Sts., Sydney.

Divisional Sub-Editor—L. D. Cuffe, VK3AM, 14b Watson Street, Neutral Bay, N.S.W.

Zone Correspondents—North Coast and Tablelands: P. A. H. Alexander, VK2PA, Hill St, Port Macquarie; Newcastle: H. Whyte, VK2AHA, Vale St., Cessnock; Grafton: G. N. Gould, 22 Constant Ave., Cessnock; Western: G. J. Russell, VK2QA, 116 Hogan St., Nyngan; South Coast and Southern: R. H. Hayner, VK2DO, 42 Pettit St., Yass; Western Suburbs: A. C. Pearce, VK2AHP, 48 Brookwood Rd., Five Dock; Eastern: W. H. Brooks; North Sydney: L. D. Cuffe, VK3AM, 779 Military Rd., Mosman; St. George: J. A. Ackerman, VK3ALG, 32 Park Rd., Carlton; South Sydney: V. H. Wilson, VK2SW, Cr. Wilson St. and Marine Pde., Manly.

VICTORIA

Secretary—C. C. Quin, VK3WQ.

Administrative Secretary—Mrs. O. Cross, Law Court, 192 Swanston St., Melbourne, Victoria.

Meeting Night—First Wednesday of each month at the Radio School, Melbourne Technical College.

Zone Correspondents—North Western: R. E. Treblecock, VK3TL, 122 Victoria St., Kerang; Western: C. C. Waring, VK3YW, 12 Skene St., Stawell; South Western: W. H. Rose, VK3UT, Ballarat; Central: G. J. Russell, VK2QA, 116 Hogan St., Nyngan; Eastern: G. N. Gould, J. A. Miller, VK3AB, "Errolia", Avenel; Far North-Western Zone: Harry Dobson, VK3MP, 42 Walnut Ave., Mildura; Eastern Zone: Mrs. P. M. Oubrard, VK3US, "Shirley", Red Hill.

FEDERAL

DX C.C. LISTING

PHONE

		37	138
VK3JD (1)		37	130
VK3ERU (2)		37	130
VK3ERW (4)		37	129
VK3ERX (3)		36	126
VK4ZP (4)		114	
VK6DD (6)		113	
VK3EE (10)		113	
VK3LN (1)		102	
VK3IG (5)		100	
VK3ES (1)		100	
VK4KS (9)		100	

C.W.

VK3HZ (6)		40	163
VK3CN (1)		40	144
VK3VW (4)		39	135
VK4EL (9)		39	135
VK3ER (1)		37	125
VK3KB (10)		39	129
VK4HR (8)		40	125
VK3ER (3)		39	122
VK4HF (11)		35	119
VK3ER (7)		40	116
VK3FH (5)		37	115
VK4DA (7)		38	113

New Members—

VK4DO (20)		101	
VK3JE (2)		39	105

OPEN

VK3HZ (4)		40	185
VK6GRU (8)		37	163
VK2DI (2)		40	160
VK3HG (3)		40	155
VK3JE (12)		39	154
VK3ER (7)		40	152
VK6KD (1)		39	150
VK3MO (3)		39	139
VK3OP (18)		39	137
VK3KX (1)		40	136
VK4EL (10)		39	135
VK2ADE (28)		40	133

New Members—

VK7KB (80)		103	
------------	--	-----	--

COUNTRIES LIST

There has been a mix-up in the status of contacts with Newfoundland and Labrador for which we must apologize. The true story is that until a new convention is passed before the 31st March, 1951, will be counted as an extra country for those who have the necessary card. Credit for Newfoundland has been given to those members of the DX C.C. who previously had it deducted, and

WI BROADCASTS

All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official Broadcasts.

VK2WI—Sundays, 1100 hours EST, 7196 Kc. and 2000 hours EST, 60.4 Mc. No frequency checks available from VK2WI. Intra-State working frequency, 7175 Kc.

VK3WI—Sundays, 1100 hours EST, simultaneous on 3580 and 7196 Kc. and re-broadcast on 50 and 144 Mc. bands. Intra-State working frequency, 7185 Kc. Individual frequency checks of Amateur Stations given where VK3WI is on the air.

VK4WI—Sundays, 0900 hours EST, simultaneously on 3750 Kc., 7196 Kc., 14342 Kc., 52.4 Mc. and 144.13 Mc. Frequency checks are given two nights previous and the times are announced during the day broadcasts. 7065 Kc. channel is used from 1000 to 1050 hours each Sunday as VK4WI query service to VK4WI.

VK5WI—Sundays, 1000 hours SAST, on 7196 Kc. Frequency checks are given by VK5WI on Friday evenings on the 7 and 14 Mc. bands.

VK6WI—Saturdays 1400 hours, Sundays 0900 hours WEST, on 7196 Kc. No frequency checks available.

VK7WI—Second and Fourth Sundays at 1000 hours EST, on 7196 Kc. No frequency checks are available.

QUEENSLAND

Secretary—W. L. Stevens, VK4TB, Box 688J, G.P.O., Brisbane.

Meeting Night—Last Friday in each month at the Y.M.C.A. Rooms, Edward Street, Brisbane.

Divisional Sub-Editor—F. H. Shannon, VK4SN, Minden, via Rosewood.

SOUTH AUSTRALIA

Secretary—E. A. Barber, VK5MD, Box 1234K, G.P.O., Adelaide.

Meeting Night—Second Tuesday of each month at 17 Waymouth St., Adelaide.

Divisional Sub-Editor—W. W. Parsons, VK5PS, 483 Esplanade, Henley Beach.

WESTERN AUSTRALIA

Secretary—W. E. Coxon, VK5AG, 7 Howard St., Perth.

Meeting Place—Padbury House, Cnr. St. George's Ter. and King St., Perth.

Meeting Night—Watch the Monthly Bulletin.

Divisional Sub-Editor—George W. Ashley, VK5GA, 33 Mars Street, Carlisle, Western Australia.

TASMANIA

Secretary—H. D. O'May, VK7GM, Box 271B, G.P.O., Hobart.

Meeting Night—First Wednesday of each month at the Photographic Society's Rooms, 163 Liverpool St., Hobart.

Divisional Sub-Editor—Capt. E. J. Cruise, VK7EJ, Anglesea Barracks, Hobart.

Northern Correspondent: C. P. Wright, VK7LZ, 3 Knight St., Launceston.

FREQUENCY ALLOCATIONS

The following is a list of the bands available for use by the Amateur Service in Australia, followed by the types of emission allowed on those bands.

3.5 to	3.8 Mc.—Al, 3, 3a, 6F3.
7.0 to	7.2 Mc.—Al, 3, 3a, 6F3.
14.0 to	14.3 Mc.—Al, 3, 3a, 6F3.
28.6 to	27.25 Mc.—Al, 3, FM.
28.0 to	30.0 Mc.—Al, 3, 3a, 6F3.
50.0 to	64.0 Mc.—Al, 3, 3, FM.
144 to	148 Mc.—Al, 1, 2, 3, FM, Pulse.
288 to	292 Mc.—Al, 1, 2, 3, FM, Pulse.
170 to	175 Mc.—Al, 1, 2, 3, FM, Pulse.
1318 to	1360 Mc.—Al, 1, 2, 3, FM, Pulse.
2300 to	2480 Mc.—Al, 1, 2, 3, FM, Pulse.
\$650 to	\$850 Mc.—Al, 1, 2, 3, FM, Pulse.
10000 to	10500 Mc.—Al, 1, 2, 3, FM, Pulse.
21000 to	23000 Mc.—Al, 1, 2, 3, FM, Pulse.
\$8000 Mc. and higher—	Al, 1, 2, 3, FM, Pulse.

Note—6F3 emission represents a maximum deviation from the quietest frequency of plus or minus 3 Kc.

RECORDING AND RE-TRANSMISSION OF AMATEUR TRANSMISSIONS

As a result of representations made to the Dept. of Agriculture and Fisheries, 23rd of the 1949 Convention, the publication of the rules governing the issue of these permits is given below.

"The Department, as you know, is totally opposed to transmission of recordings from Amateur Stations but realises that, in certain cases, re-transmission of Amateur signals may produce beneficial results. It was intended that such recordings could be made only in cases where evident faults in transmission justified such action.

It is proposed to re-allocate permits each September, or as a vacancy exists.

"Conditions governing the issue of such permits require, before an application may be considered, that the licensee concerned must satisfy the Department that:

- (a) he has equipment capable of producing recordings of good quality;
- (b) he has had adequate experience in sound recording;
- (c) he is actuated solely by a desire to improve conditions on the Amateur frequency bands (permits are not issued to enable licensees to extend their knowledge of the subject);

W.I.A. ACTIVITIES CALENDAR

Feb. 7: Appointment of Federal Councillors.

Feb. 19: 20th Convention Items due at F.E.

Feb. 28: Convention Per-Capita due with F.E.

End of fiscal year of Divisions.

Mar. 10: Agenda for 20th Convention issued.

Mar. 17: Annual Per-Capita from Divisions due with F.E. not later than this date.

Mar. 31: End of fiscal year for F.E.

Apr. 7, 8, 10: 20th Annual Federal Convention in Melbourne.



- ★ The Ham specially catered for.
- ★ Quality Cards at economical prices.
- ★ Prompt Service.
- ★ One, two or three colours if required.
- ★ Interstate orders handled.

Dee Why Printing Works

67 HOWARD AVENUE, DEE WHY, SYDNEY.
Telephone: XW 8367.

Proprietor: GEOFFREY BOWER

QSL CARDS

The DEE WHY PRINTING WORKS is making available to the Amateur Experimenter a Special QSL Card Printing Service. Knowing the requirements of Hams, we are confident the service offered will be unsurpassed in Australia.

Cards can be printed to your own specifications, and if illustrations or blocks are necessary, our Art Department can produce these for you.



McGILL'S (Est. 1860)

OVERSEAS AND LOCAL POPULAR MAGAZINES
OBTAINABLE ON SUBSCRIPTION

AMERICAN . . .

Audio Engineering, £1/16/-; CQ, £1/17/6; Communications (now Television Engineering), £2/2/6; Electronics, £10/5/-; Popular Science, £1/16/-; Popular Mechanics, £2/0/9; QST, £2/9/6; Radio News, £2/4/-; Radio Electronics, £2/2/3; Science Digest, £1/13/-; Science and Mechanics, £1/7/6; U.S. Camera, £1/14/3.

ENGLISH and AUSTRALIAN . . .

Australian Radio World, 16/-; Amateur Radio, 9/-; Electronic Engineering, £1/12/6; Radio and Hobbies, 12/-; Radio and Science, 12/-; Shortwave Magazine, £1/7/6; Wireless World, £1/12/6; Wireless Engineer, £2.

(Add exchange to Country and Interstate Cheques.)

Large Range of Technical Books, Stationery and Novels on Display.

Mail Orders by Return Post.

McGill's Authorised Newsagency

183-185 ELIZABETH STREET, MELBOURNE, C.1, VICTORIA.

(The G.P.O. is opposite)

M 1475-76-77

(d) transmissions will be recorded and played back only at the request of the Amateur Licence concerned; and
 (e) no use will be made of the recordings other than as stated in (d) above.

"Applications from members of the Wireless Institute should, in the first instance, have the endorsement of the State Wireless Council and all such applications should be submitted to the Superintendent (Wireless) in that State for his investigation and recommendation."

The above gives the important points of the requirements, and the present holders of such permits in each State is listed:—

N.S.W.—No permits have been issued.
 Victoria—VK3HF, H. Fuller; VK3DHD, L. Morgan; VK3UW, W. Brownhill; and VK3VM, E. Mair.

Queensland—No permits have been issued.

South Aus.—VK5GL, C. Tilbrook; and VK5LK, F. Holsten.

Western Aus.—VK6KW, R. Hugo; and VK6JS, J. Squires.

Tasmania—No applications have been received.

This service is for you, so make use of it.

FEDERAL QSL BUREAU

RAY JONES, VK3JR, MANAGER

Cards to hand from YS1CIV (VK1SC) of No. 2 Sergeant's Mess, R.A.F., Seletar, Singapore, quotes the present QTH of the owner as 53 South Terrace, Plympton Park, Adelaide, South Australia, and requests QSL cards sent to him. Is this correct? That says he is returning to the Adelaide QSL shortly?

Neil Roberts, ex-VK5NR, ex-VK5NR, ex-VK5NR, can be currently reached at the following QTH: c/o. ZLSMH, Foreman Technician, Barewood Airport, Christchurch, New Zealand. Noel expects to assume a ZL1NR in the early part of 1950.

The following QSL card from MP4BAB comes from VK3CJ. MP4BAB is in Triccia, Oman, expects to leave for his home QTH in England by Xmas, 1949, and requests that all QSLs be sent either via VK5B or to 6 Alder Lane, Hollin, Oldham, Lancs, England. He also states that all QSLs for MP4 will be routed via R.G.R. and that if sent direct to Triccia, Oman, he requests this treatment also for cards for MP4BAB, BAC, BAK, BAJ. He mentions that there is also a station in the Shetlands of Qatar with call sign of MP4BAB, but he is not certain of its location.

The QTH of MP2JP in Tripoli is Box 66, Tripoli, North Africa. MP2JP states he has sent QSLs via surface mail to VK5 2NS, DO, PX, TF, DI, ED, EO, 4DO, SKU. Cards can be either routed direct or via R.G.R.

Full and final details of the South African International DX Contest, which was held in January, 1950, did not arrive in time for publication in the December issue of "Amateur Radio." This Contest has been established as an annual event. Logs must contain the following information: Date, time, band, call sign, serial send and received, points claimed, multiplier and number of countries worked. Logs should reach the S.A.R.L. Contest Committee at 47 Fower St., Pretoria, South Africa, by 31st April, 1950. Prizes will be awarded by the national committee. Certificates will be sent to the winners of this contest in each country.

While on the subject of DX Contests, the writer strongly agrees with the views expressed by Bill Morris, VK3W, in a recent issue of *QST* & H. B. Bill pointed out that "the strength of the number of contests is such that there is now scarcely a free week-end in which the more popular DX bands can be used without being entangled in some International DX Contest with the resultant QRM and interference to DX stations using the more luminous logs. This is a matter which might well be the subject of consideration by the L.A.R.U., as while three or four contests a year meet with the approval of everyone, the multiplicity of contests staged annually as International events means a falling off in interest in the old established Contests."

States contemplating the erection of a GPO reversible fixed or rotary beam should profit by the experience of the writer in regards to the placement of the array. Two 1/2 wave M. Ants are to be placed at right angles to each other and so placed that their firing directions give global coverage. This worked out in practice equally as well as it did in theory, but an aspect that was overlooked was that the spread of one of the arrays facilitated the bird population around the neighbourhood. During the daylight hours these feathered friends dispersed and preened themselves on the spreader and shorted the feed line. The writer is feeling a sense of well being which, however, was short lived as on returning home from work one fine Monday afternoon with pleasant thoughts of a couple of hours of DX before dinner, he was met by an irate XYL who led him backwards to the rotary clothes line situated directly underneath the spreader. So accurate had been the aim of our

feathered friends that the contemplated two hours of DX resolved itself into two hours in the laundry re-washing the objects of our friends' marksmanship.

The QSL Manager will be on holiday during January. The Otway district will claim half of the holiday period while the other half will be spent in Tasmania. In view of the fact that the elusive but valuable yellow metal, tin, is in demand, QSL traffic and correspondence is inevitable during this period.

The most travelled card has recently reached its correct destination after having travelled approximately 25,000 miles. W3ASB of Philadelphia, sent his card direct to VK5BO as an open postcard and addressed correctly except for the omission of the name of the State. After travelling around various countries in Australia, it was enclosed into Ottawa, Canada, but otherwise unknown to the postman. It was eventually returned to the sender, who enclosed it in an envelope and sent it to the Federal QSL Bureau, for forwarding.

Congratulations to Johnny Jones, JA5AJ, ex-VK5JR, on his promotion to Squadron Leader. Johnny is presently signals officer for 17 Squadron R.A.A.F., B.C.O.F., Iwakuni, Japan, and should reach his home location by Easter 1950 after a 15 month sojourn in Japan.

A few days ago he sent a card to PHEXA and returned by the N.Y.R.L. bear the stark endorsement—"PHEXA was murdered in Indonesia."

Stations awaiting a card from AC4NC should take fresh hope from the knowledge that a QSL is certain to come. Chik, advised me recently that two years of his life have been spent in the service and he awaits a further printing and assures all concerned that a card will be sent to all contacts.

NEW SOUTH WALES

NORTH SHORE ZONE

Apart from the lure of the beachies, conditions on the DX bands have been so poor that most of the gang except the diehards have been conspicuous by their absence. However, 2F4, 2AMB, 2F2 and others have been recorded by some very choice stuff wherever the bands have opened up for a short break. 2FV has snagged QO6, F8B, and F7B in the early mornings, as a sample.

2TL has decided to give away 812A, finding them too temperamental, and is re-building the final using an 811. 2ANB has at last given up on audio and is using a 2N300 power section, and is now using an 811 mix on c.w. and phone. 2GQ still has been laying away on 40 and cleaning up the shack for the 47th time—he doesn't have any more success than the rest of us! 2GQ has been counting up votes for the Senate, and reported that after the Contest scores are finally made up, 2AMV is in the lead. 2AMV has come from Moama with a nice solid signal 2KM away at sea again, and can be heard quite often from the direction of New Zealand. 2IN has got ten more elements on his beam, after all smuggling and climbing in the 100 metre array. 2AW, the maestro, heard raising the faintness of DX to his QOs from his new location—he must give away a handful of caps to each new country worked, judging by the way they go back to him. 2AJ has been showing again after a long absence. 2JG seems to have retired from the scene, although believed to be taking an intense interest in audio amplifiers. 2AGN hasn't been heard for a while.

2AGW appears to be maintaining his beam service to England, in spite of the present woe conditions. 2E6 is rumoured to be getting in lots of early morning in practice for the 1950 International R.G.R. Contest. 2APQ is back from VK5, but tells me he has been posted to Townsville, so will be there with a VK4 call for about two years. 2RA has been heard occasionally after rare ones in the early mornings. To all the gang on the North Shore, belated, but nonetheless sincere, good wishes and DX for the New Year.

EASTERN SUBURBS ZONE

1HP has made a comeback on 20 metre phone with a brand new rig plus v.f.o. Hopes to get among the DX again. Harold is a diskum old-timer and past president of the Institute in N.S.W. 1TN has been active on 20 and 40 metre phone, using a small dipole with good results. 2F4 has been doing extra well on low power on 20 and 40 phone and c.w. He is getting his share of the DX. 2CF has been more active lately on 20 and 40 metre phone and has been working DX. 2F5 has been active and is putting out a better signal than ever. He is anxiously canvassing estate agents for a high located piece of ground on which he hopes to build, retire and erect that super sixty foot tower. 2F5 has been on holidays and is in touch with the framers of the tower that he is found to construct and erect a GPO beam and hook it on his 40 foot tower. It is paying dividends and Frank is now working more DX than ever. 2KT, due to a change of job, Les has not been active or late, but will be consistently heard on 20 metre phone when his new mast project is completed.

2AJG still toiling with his pet subject—electronic keying systems—but managed to tear himself away from it long enough to re-build his final with resultant improved output and quality. Aims to experiment with suppressor grid modulation.

2CE has been occupied building portable gear and has been heating testing same, running about 1000 watts plate power in order to achieve an ultimate in results from battery and generator operation. The receiver in use with the portable rig is a 2 1/2 tube super with a sensitivity that has to be seen to be believed—but this is just what we have come to expect from 2CE. 2QD has had some 20 metre c.w. operation, but has had troubles. Anybody got a house in a good location that happens to need a tenant? 2BF, the Waverley Radio Club, a fairly ancient institution in this area, has had near 20 metre phone transmitter put into use. Located in a quiet corner of the suburb as the station is rarely heard. 2DV only seems to bob up for a brief time during festive seasons.

2NO is still bowling over the DX. Heard him about 5 a.m. one morning working Italian, French, German and North Africans after he had finished his regular chat with a string of G.H.Q. men Don King off for a walk in the sun. Unfortunately like others, he just has to work for a living so it was a case of "big switch." 2AK is considering another re-conversion of the AT5, using 50 watt pentodes in the final with grid modulation. Activities have been curtailed lately but always seem to make the grade for the usual 16 metre phone fraternals on Sunday mornings.

2AQH would do better if he would transmit his seasonal greetings over the air instead of sending cards. hasn't been heard for months. We know he has more than three harmonics still get on the air, even if these are prominent background. How about it, Ted? 2AZP seems to have disappeared lately, same applies to 2AEI, 2AZH active on 20 metres phone with excellent results from grid modulation to an 813.

NORTH COAST ZONE

It was a happy Xmas this year, everyone seemed to be enjoying themselves and quite a number of portables were active. It was very pleasing to hear the gang exchanging greetings in the true Ham spirit. Conditions on the North Coast have been marred by heavy QRN, storms nearly every afternoon and night. 2AJB is on again, now off the reliving the shack again after a long absence. 2AJB off until he completes the emergency gear, won't be long now. In his spare time Jack has been practising trading for yabbies, getting ready for his challenge to 2E6 and to defend at the next Urunga Convention. 2OZB, 2GQ, 2G1, 2F1, 2EA, 2NY, the Clarence gang all competitive on 16 metres. The Richmond River gang all competitive on 16 metres. What's wrong up there Doc?

2RN has been on since his return from holidays with nice QRP signal. 2ARY, 2AAP, spending few weeks in the bush, has been active on the junk. Harry happens to bring back a tape recorder for the Urunga Convention. 2XO lost all his antennae in a 100 mph blow. 2ASF and 2ZS active on 40 and had visits from the "Coos" of Coonamble. 2ACU and a few 90's have been active on 40 at the local during his stay. 2SH heard on 40 approximately 40 minutes ago a bag of bream. Doug always comes on 40 and tells of the "whoppers" but hasn't been on 40 for three months so the fish must have been off at Port Macquarie. 2FA using DX on 28 Mo, and getting almost 2A1000. 2A1000 has a new antenna and improved results. Emergency network forums have been sent out to the gang, but so far the needed information has not been returned to 2PA. Please give it your attention so the net can get on to a good start early in the new year.

A big programme and plenty of entertainment has been prepared for the 2nd W.I. North Coast Convention to be held during Easter weekend—8th, 9th and 10th April. Come along with the YF and harmonics and join in the fun. There will be a surf carnival, motor bike races, dances, fireworks, competitions, picture shows. For the Hams a lecture competition, 14 M. contest, a meeting of prizes. A highlight will be the yabby catching competition. 2JK's challenge to 2KR carries a side wager of £5. We were sorry to hear that 2KR fell down a gorse trap during the Xmas holidays, resulting in his being hospitalised. 2XO and the Urunga Hotel booked out for the Easter Convention, so if you can't let him know as soon as possible if you require accommodation. Hotel expenses 18/- per day. If you like to camp, bring a couple of rugs and sleep on the beach, you can eat out in Urunga. A number of interesting visitors are expected from VK4. Get your portable gear ready and join in the fun. Incidentally the night after 2ER was in combat with the trap, something was heard on 40 calling "Willie Pong." Cheers and wishes for 1950 from the North Coast gang.

HUNTER BRANCH

Poor conditions plus the frivolities of the festive season probably accounted for the reduced activity of the month. 16 metre "reliables" 2FP and 2AFS

A. & R. ELECTRONIC EQUIPMENT CO. PTY. LTD.

We manufacture a full range of Transformers and Reactors suitable for use by Amateurs.

The following are selected types available at Trade Prices:—

PT1356—400/400 v. 150 Ma., 2.5v. 5a., 2 x 6.3v. 2a., 5v. 3a.
PT1380—450/450 v. 200 Ma., 2 x 6.3v. 2a., 5v. 3a.
PT1400—425, 565 v. per side C.T. 250 Ma., 2 x 2.5v. 2.5a., 2 x 6.3v. 3a., 5v. 3a.
PT1371—500, 750, 1,000 v. per side C.T. 300 Ma.
PT1368—1,000, 1,250, 1,500 v. per side C.T. 200 Ma.
PT1316—10v. tapped at 5v. and 7.5v. 6a.
PT1525—2.5v. 10a. for 866s, 1,000 v. DC Work. Insulation.
PT1305—2.5v. 10a. for 866s, 2,500 v. DC Work. Insulation.

Z1012—35h. max. 20h. 100 Ma. DC, 430 ohms, 1,000 v. DC working.
Z956—30h. max. 20h. 200 Ma. DC, 160 ohms, 1,000 v. DC working.
Z962—"Swinging" Choke 20/200 Ma. DC, 100 ohms, 1,000 v. DC working.
Z983—"Swinging" Choke 30/300 Ma. DC, 90 ohms, 1,000 v. DC working.
Z986—15h. max. 10h. 300 Ma. DC, 60 ohms, 1,000 v. DC working.

Please write for illustrated catalogue listing our full range.

A & R ELECTRONIC EQUIPMENT CO. PTY. LTD.

1 LITTLE GREY STREET, ST. KILDA, MELBOURNE, VICTORIA.

PHONE: LA 3657

Trade Sales:—

WM. WILLIS & CO., 428 Bourke St., Melbourne (MU 2426).
J. H. MAGRATH & CO., 268 Lt. Lonsdale St., Melb. (Cen. 3688).

Wholesale Distributors:—

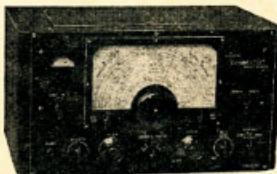
R. H. CUNNINGHAM & CO.,
62 Stanhope St., Malvern, S.E.5 (UY 6274).

Setting a New Standard in Communication Receivers—

The "Commander" Double Superhet.

Free Data Sheets on Request

Interstate Representatives: West. Aust.—Messrs. Atkins (W.A.) Ltd., 894 Hay St., Perth. Queensland—Messrs. A. E. Harrold, 123-5 Charlotte St., Brisbane. In other States direct your inquiries to firms handling Bright Star Crystals.



T.C.C. 1.5 uF. 4,000 v.w. Condensers, £2 each. Chanex 2 uF. 3,000 volts d.c. working, £1/15/- each. Ferranti 0-500 Microampere Meters, luminised dial, new, £2 each.

VALVES—R.C.A. 834, new, £1/8/- ea. Sylvania 807s, 15/- ea. R.C.A. 6U7Gs, new, sealed cartons, 9/- ea. Sylvania 6X5GTs, new, sealed cartons, 10/- ea.

Wanted to Buy—TYPE 3 MARK II TRANSCIEVERS in good order.

CRYSTALS, as illustrated, 40 or 80 mx., AT or BT cut. Accuracy 0.02% of your specified frequency, £2/12/6 each.

20 metre Zero Drift, £5 each. Large, unmounted, 40 or 80 metre, £2 each. Special and Commercial Crystals—Prices on application. Crystals re-ground, £1 each.

BRIGHT STAR CRYSTALS may be obtained from the following Interstate firms: Messrs. A. E. Harrold, 123 Charlotte St., Brisbane; A. G. Healing Ltd., 151 Pirie St., Adelaide; Atkins (W.A.) Ltd., 894 Hay St., Perth; Lawrence & Hanson Electrical Pty. Ltd., 120 Collins St., Hobart; Collins Radio, 409 Lonsdale St., Melbourne; Prices Radio, 5-6 Angel Place, Sydney.

A.W.A. Split Stator Transmitting Condensers, high voltage, £2/15/- each.

Screw-type Neutralising Condensers (National type), suits all triode tubes, Polystyrene insulation, 19/6 ea.

Prompt delivery on all Country and Interstate Orders.

Satisfaction Guaranteed.

BRIGHT STAR RADIO 1839 LOWER MALVERN ROAD, GLEN IRIS, VIC. Phone: UL 5510.

still working choice DX—new countries scarce though. Believe Bob just has his noise in front, he must have read last month's notes. All members wish to congratulate 2KB on his success in the last Federal Elections and hope you can still find time for DXing. 2KB has now got 200 DX and has finished the new shack and works 20 DX with fixed beam. 2PT on 20 occasionally. Bill 2CW was unfortunate to be taken to hospital recently, but got home for Xmas and is OK now. Had the pleasure of seeing the big rig at 2ATX about five stages ending up but thinking of going underground with rig, no room in garage—that car must be very big Frank. He is now at b.c. station with 2ZG, 2AMW and 2TG. 2ANU back on 40 again with this nice signal. Bill has had the best news we have heard from DXers on 40. 2UY has the Rx going, can throw away the 0-V-1. 2US putting 89 signals into radiograms now, but works a few Qs on 16. Congrats to Bert Watts who received 200 QSLs. 2ATX has not yet arrived. 2ATX enjoyed his first field day at Woy Woy. Fred does not get many SUNDAYS off. 2PQ still very strong in Europe on 10. 2TE concentrating on 10 and 20 DX. 2PQ incidentally active on 40, but could do with his portable rig. 2ATX has been mentioned 2XV still easy on flying, the c.w. practice receiving little attention. Congrats to 2OS and 2ADN for working VKEs and ZLs on 50 Mc. 2UF putting nice signals on 10 and 20. 2ADN has not had the 2BZ looking for real DX on 50 Mc. and is looking for band to 144 Mc. a lot. 2ANU of Muswellbrook on 50 Mc. with 4 watts, working through to Sydney—no effort. 2BZ very pleased with new beam on 50 Mc., 200 feet high, Sydney went now. 2ANL also on 6 with strong signals. The Rx 2BZ looking nice now, glad the Jr. op. OK. 2AGD been batching while XYL in hospital, hope all the parents are over now; George; has new freq. meter; phone—meter. In the car now. 2ZG had great holiday at Forster, very nice, especially on 40 with the portable rig in the caravan; 2ZS was there too and both caught plenty of fish.

Not a lot of news from Maitland, but 2TY getting time out with 6. 2ADN only heard on 10. 2AMU GA 2AKP heard on 10, 20 and 40 a nice signal, like a QSO Vic. 2DU chasing DX with good results, as usual. 2VU, of Singleton, on 30 and working plenty of ZLs; gets out well on that band. 2LW the assessor member from Maitland last meeting, says the code marks are getting better. 2Henderson 2C1 on 40 metre phone works 2WZ often, while George 2SO is on 40 c.w. 2AHA near Maitland, the old soap worked VKEs and ZLs. 2AMU M. T. Blake to 2AFN, 2PQ, 2ANU and pals for assistance in putting up a 100 foot pole, 45 feet high and location 120 feet above sea level. 73 till next month from the Hunter boys.

COALFIELDS AND LAKES

Activity has been limited due to the holidays and plenty of the gang should be on again by the time these notes are read. 2KRE has been on 14, 7 Mc. and listens for the gang on 50 Mc. 2AEZ doing good work on 50, must have the beam going. 2AMU on 14, 20, 50, Len has a nice rotary. 2RU working on 10, 20 and 40, has some QSOs with VKEB, VKEs, and ZLs. Only one local 2AFN always building something, but finds time to work on 10 metres. 2KZ still the "W King" on 10, but still in trouble with Delaware; what about that 15 W.A.S. in 1950 Max? 2VU, 2PZ, 2MK, 2ALR, don't seem to be active. 2ADN has been getting the car when the DX breaks on 50 Mc. but getting his share of Interstate and ZL stations. Teles regularly with Sydney and Newcastle on 14. 2EL, another one on 6, doing well with ZL and VKEs. 2AMU 14, 20 Mc. 2VU working on ZLs no trouble; Geoff will be going on holidays soon. 2ANU a newcomer to 6, running from vibrator supply, located at Muswellbrook. The Newcastle Coalfields gang were favoured by a visit from 2AH, 2VU, 2AU, 2M0, during the new year holidays. The v.h.f. gang certainly get around.

SOUTH COAST AND SOUTHERN

The Xmas party held at the Wollongong Club, 2AMW, attracted many. Lots of toasting and refreshments and some heating next day. Bill 2WP has foreseen the boat breakers next day. 2PM at Cannons on 40 with 4C450A using 6J7 and 5V6 to modulate same, built into xtal and magic eye stage, also condenser for 270 Mc. who is in hospital. 2PZ has small rig going nicely and new xtal mike made all the difference. 2ZQ introduced his brother to Ham Radio. He was down there for a few days. 2G1, 2TA, 2TC and 2PN are all on 50 Mc. 2ATX and 2PQ are all doing well down there. Another Ham will be located on a Bowral, an ex-commercial op and is located at the hotel. 6W6-807 the Tx, and with an ARS will operate c.w. for the beginning. 2OY has acquired a BC348, also a 2ADN that was given through the hands of the U.S. Dept. but with the aid of an axe managed to get it into shape!

2AJF very busy man re-wiring one of the alternators at Burrenjack Hydro. 2ALS spending holidays

at Manly, has new half wave 80 metre antenna which appears to cut out the b.c. 2AKE been over at Bathurst and spent few days there. Jim has nothing but the highest praise for 2NS' gear. From 2VS in England comes the following news: 2G1 is the same, wherever one goes and the GAs continue to do well, over there and loaned me a Rx. The 160 metre over top band is the most popular for local chats, 80 metres is popular too and 40 is like the American phone band, in 20 when conditions are good. A.C.P.C. antenna fees are 10/- a year for 10 watts, £1/10/- for 25 watts, and £2 for 25 to 150 watts. I have been to many society meetings (R.S.G.B.) and also visited the Radio Amateurs' exhibition, a week ago at (Hendon). I have not contacted the V.E. gang through one of the G stations. Diagonal space is very cheap, SCR522 1/1/17, BC438 £15, 2CS tubes 10/-.

The many v.h.f. antennas around London gave me the idea that every Ham was on 6 metres! All the best to the gang, especially to those at Canberra."

VICTORIA

MOORABBIN AND DISTRICT RADIO CLUB

The December meeting was held on 6th at the club rooms, and very good membership was present. The President (VKE3K) occupied the chair and in the absence of the Secretary (Working), the Assistant Secretary read the minutes. A welcome was given to a number of visitors by the President. A very nice lecture on the Gridode Rx Tube was given by Len Jackson (a radio design expert), ably supported by John Dawes and Ed. Manifold (3EM). These gentlemen brought all the gear and after questions were asked and answered, a Application has been made for a transmitting licence; also for membership with the W.I.A.

The next meeting will be held on 7th February, when films will be shown.

CENTRAL WESTERN ZONE

Amateur Radio lost a good friend and the Bush Fire Net a regular station, with the sudden passing of Joe Graham, VLSK3R of Ararat, just prior to Christmas. Joe was a member of the Commissions (especially those quiet little stories of his). To all his relatives and nearer friends, we offer our sincere sympathy—"he was a good scot". V.H.F. activity stirred slightly in the zone during the last few months, with some good work between 3DP and 2AKP. Jim had the Rx and Keith a super-regen. Now the stage is set for that endless quest of bigger and better sigs, antenna, and what have you—we certainly are a resourceful lot.

Our newest ham, VKE3AJO, is busy building up a nice flash transmitter. John wrecked the 2AM and is busy on a rack and panel job relay controlled and with fast approaching holidays, Stan 2AMU has been working on the 2AM. 2AKW now has the rebuilt RA10 going and finds the double conversion to 100 Mc. very nice indeed.

For the information of other zone members, it was decided at the last zone hook-up to build a combination of the 2A10 and the Bushfire frequency, 6 volts d.c. or 250 volt a.c. so that it can be used on the farm or in the towns.

Just in case it may have slipped your mind, zone hook-up is on the second Sunday of each month at 10 a.m. on 7150 Kc.

SOUTH WESTERN ZONE

3IC reported on sick list, has however been working a bit of DX on 20 metres. 3APG broke the silence by coming on recently with a power of 20 watts. 3IC was leaving to reconstruct his GSPD beam. 3ARL was leaving for the West but hoped to be able to get home each weekend. 3AMK has been working on 6 metres, also 3AKE. 3CM has been quiet lately, perhaps he is thinking of going QRO and studying it out. 3ALW worked VE1GG on 20 metres, then his 2A10 phone contact. 3AMH and 2AJT have been working on the 20 metre band on phone. 2AJT heard putting out a very f.b. sig and got 40 dB over the 9 from a VK4. His four element beam is on the way but believe he is using a 2A10 with 50 watts input.

Quite a bit of portable work was done over the holidays. 3BU took his gear away and 3ALM using his AT2R2 with Tivac with a nice signal. Using that dog-legging long wire Lloyd? 3ASV and 3AMH were in the U.S. at Xmas and had a successful trip! Heard 3WY worked KHM5 and got a nice report, using the big rig! 2AJT has been in the Western District with 2AKR and understand the car gave trouble. 3AVX visited Geelong last week.

Heard 3UT getting a share of DX. Vee beams seem to work OK. 2ALM has his two element beam up and getting good reports. Still can't work all who can hear. GSAEVA visited JAMH on way to the hills. 3AMH has been working about the same for catching the eye. 3HW mentioned about couple more reflectors on the present four element beam. That is all for this month boys, if your name is not mentioned, it is your fault.

NORTH EASTERN ZONE

Once again your scribe (3VY) is faced with the problem of compiling notes for this column and once again his application to John Miller's efforts in the past is so high. Over the past month or so very few of the zone boys have been heard on 40 metres, maybe it's the holidays, maybe DX on 10 or 10, or maybe it's the v.h.f. bands; whatever it is, we have to report on any activity.

Several contacts have been made with ex-zone member Doug of 3DW, who is emitting a fine signal from Woodend and appears to be quite happy down there; best regards to the zone Doug. 3VY has recently re-built his speech amp. and modulator, the latter is now 177. 3VY and 3XN 2A3, driving 809s. 3JK landed an 18 and a 5 pounder (Murray Cod) and is still chasing them. 3KR with the zone's most active Ham on 40 metres. 3VY and his wife have cleaned out for Xmas, 3VY has had a visit from 3ZB.

3KR has again erected his WSJX beam and is having lots of fun with DX on 20 metre c.w. 3HP has prohibited all boat bands in his area until after the harvest. 3VY spent a few days holidaying in Busselton over the New Year. 3VY, 3AMH, 3MM, 3BE, 3ALN, 3AB1, 3DS, etc. His thanks go to Bob, 3GR, for showing him around. 3ACW paid a visit to 3KR on New Year's Day. All members of the zone wish to convey their deepest sympathy to Tom and Jack Speer in their recent sad bereavement.

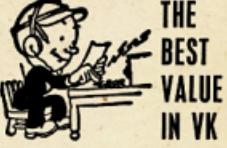
QUEENSLAND

The news from Divisional Headquarters this month is very scarce. Owing to the very poor conditions prevailing on the 7 Mc. band, little has been heard at this location on the 4W band. It appears that little business has been done owing to the fact that Councillors have been otherwise engaged at Christmas and New Year festivities.

By the time these notes are read the financial year of the Division will be at an end. Once again members will be called upon to elect a new Council. During the past year there has been a lot of criticism, just and otherwise, of the work done by Council. Some of the old Council will not be candidates for the new Council as they have found life members. Councillors and their efforts have not altogether been appreciated. It is well to remember, that these jobs have to be carried out in spare time and unless one is prepared to sacrifice his domestic ties, the spare time at his disposal will not be enough to carry out the duties to the satisfaction of most.

It is sincerely hoped that each and every member will give his ballot paper careful consideration, and we trust all that it is not only a privilege but a duty to be called upon to elect a new Council. During the past year there has been a lot of criticism, just and otherwise, of the work done by Council. Some of the old Council will not be candidates for the new Council as they have found life members. Councillors and their efforts have not altogether been appreciated. It is well to remember, that these jobs have to be carried out in spare time and unless one is prepared to sacrifice his domestic ties, the spare time at his disposal will not be enough to carry out the duties to the satisfaction of most.

The outstanding feature of the work done by Council during the past year were the establishment of an Emergency Network, the introduction of C.W. Transmissions of Morse Practice over 4WI, and for mention of a Technical Committee. Membership shows a slight increase of approximately 30 members.



Modern Attractive QSL CARDS

YOUR DESIGN or OURS

Prompt Efficient Service

Write for Quotes and Samples

FRANK MAHER

209 Melville Road

Pascoe Vale South, Victoria

Interstate Orders Accepted

Mackay (4KW).—4EW has moved to Brisbane, a new Ham and is on 14 Mc. band with low power. 4BQ is preparing to move to the country and has built up a generator powered job for the new QTH. He has been active trying out the new tower and is building the boom to go on top with a four element on 20. 4FH once again shifting to a new QTH, believe John is going to give 4KR some QRM. 4MA has been active after a long recess and has heard the last few weeks on low

4AM now installing a v.f.o. Visitors at Mackay during the first part of December were 4MV, from Brisbane, and 4BJ from Bundaberg. After many weeks of poor conditions on the 14 Mc. band and thus being unable to maintain the weekly skips with 4KW, it was due to short skip on the 28 Mc. band that we were able to contact the zone manager 4KW, and so once again put the Mackay zone into the notes.

Townsville (4GD).—Here again short skip enabled us to contact 4GD on the 28 Mc. band. QSL prevented us from getting more than one item of news, that being that 4RW is now using a two element rotary beam on 14 Mc. fed by 75 ohm ribbon.

Sundberg (44X).—44X has recovered from his illness and doing very well on 7 Mc. band. Frank is not satisfied with his band-switching rig and may change over to plug in coils. Our old zone antenna, 14B, is still in use, radio parts are good and has sold out all his gear. We believe that Jack, 4CW, has a shack full of surplus gear now, and has found time to erect the 4Bj tower in his own back yard and hopes to have the beams going soon. Jack is in the 14 Mc. phone from the new QTH. 4XJ settled back in Bunker and heard working some nice DX on 14 Mc.

Gymia (4HZ).—4CR very quiet lately. 4XR is a rather folded dipole doing yeoman service, however we believe Eric has some dural for a new beam. 4LN playing around with a DR196 converted to the 7 Mc. band. 4RA has a new harmonic. 4XK has been two weeks—one reason to keep an eye on the 6 metre band for that big break through to the Wa. the other is to work all the BX coming through on the 28 Mc. band. Judging by what we have heard about Max working the Yanks on 10. 4HZ he extended his antenna, which Jim is thinking of extending further into the 8100's. Jim we work Jim, working the Yanks and the 4X's, etc., etc.

Brisbane (4EL)—4RC, with a new exciter unit (66, 6NT, 807), put up a huge score in the CQ Contest using all bands and 35 watts. 4GB installed a brand new 813 in place of the p.p. 834 and is doing well with the DX heard a lot on 10 and 40 meters. 4FJ has moved to a new location calling QO on 28 Mc. Will be interesting to see how the new location compares with that Mango and Grapefruit Grove up in Townsville. 4FJ has been mighty busy knocking over Europeans galore, with nice new three element beam. 4AP, as is common these days, is putting in a lot of time to the excellent antenna arrays, uses his gear to the antenna business thoroughly and keeps careful record of the various types used. The latest, a three tier stacked array of multi-elements, enables him to work DX that can't even be heard by any one else. Nice work Alf!

4JG is heard with a beautiful T8X QRI that is emanating from the good old Clapp oscillator. 4RT was heard on 28 Mc. with nice quality phone and also heard on 7 Mc. phone. 4EN is threatening to be heard on 28 Mc. and I am sure an Eric that familiar copper plate flat is in mind. 4HR, 4LS was heard talking of trying the new "frequency modulation" with just an IN34 diode and a mike for the modulator. 4LS was first reported to be a commercial 4, but I heard him recently, but turned out to be old Eric knocking around. We had a 28 Mc. QSO Contest, at a terrible rate, and is believed to have scored 5,000 points on 7 Mc. alone. Eric has just completed his 29th QSO with G5ZA. 4KH, everyone will be glad to hear that Bill is slowly getting over his trouble, and is still after leaving hospital minus a "big toe" on the way to recovery. 4JA has built yet another receiver and is talking of beams of the rotating type, running 50 watts to an 807 final plus a Clapp. 4XO seems to be doing very well with his "plumber's delight," knocking over Europeans on 28

SOUTH AUSTRALIA

The monthly general meeting for December took the form of a Xmas social and to say that it was a success, would be a gross understatement. L.W.L.A. who shouldered the main job of organising the social, deserves all the praise that has been bestowed on him by those present. The function, in previous years, has always been of joint nature between the W.L.A. and the I.R.E. but this year it was only the W.L.A. and the I.R.E. having held their socials a time or two before. Incidentally apologies were received from Mr. Tyrrell (President) and Mr. Gove (Secretary) of the I.R.E., regretting their inability to attend. A short time ago, the W.L.A. meetings will not be amiss, and with Rose Kelly compere (and an 89 plus 43 dbl one at that) the social started off with a bang. The toast of the King was proposed by the President (Hal Austin, W.I.), and the rest of the visitors by the Secretary ("Doc" Barber, 5MD). The W.L.A. were welcomed by the incoming visitors stood him good in stead in this, that's what Rose said anyway. The Chief Radio Inspector (Mr. H. K. Burbury) responded in very measured manner to this toast, and stressed the amateur relation existing between his Department and the Amateur. The toast of his Department was proposed by Douglas Whithorn, SBY (and who would be more fit to do this), and the President responded with an excellent speech. The show was opened by the band of the Royal Marine Band (comedian), Mel Whittlesey (piano accomodation), and Ted Cobbins (magician). The tucker was excellent, and everybody left for home more than satisfied with the Xmas Social of 1949.

My spies tell me that some of the VK5 boys are discussing recently as to whether the K5s boys did not have wet or dry, and 54F very dry, and 54G wet. I was told "why not have a K5s season with the wet, and one for the dry, complete with a Xmas tree with pretty lights for the dry." Very subtle. Owing to the call of duty I was unable to attend the social, and I was very sorry to miss the magician as he told me that some of his tricks were a success, especially when he plucked rabbits out of the air, and hares from somewhere or other. I always miss out the good things.

TUBULAR CAPACITORS

INFORMATION BULLETIN

U.C.C. wax-moulded paper tubular capacitors have very stable characteristics and conservative voltage ratings. They are moulded in high-melting-point synthetic wax designed for minimum moisture penetration. The capacitors are made from aluminium foil for low power factor. Extended life tests show little reduction in insulation resistance when operated at 140° F. at 95% relative humidity.

SPECIFICATIONS

Insulation Resistance—1,000 megohms per mfd. (min.).
Capacity Tolerance up to .01 mfd. \pm 25%.
Above .01 mfd. \pm 20%.

53 CARRINGTON ROAD, MARRICKVILLE, NEW SOUTH WALES.
POSTAL: Box 49, Marrickville. * PHONE: LL 3211.

★ Associated with TECNICO Limited of Australia and Telegraph Condenser Co. Ltd.,
British Insulated Callender's Cables Ltd. and United Insulator Co. Ltd. of England

contact with somewhere or other. He is fast assuming the mantle of SJS. Another one who always seems to be on the air is 5WF ("Inky" to you), who seems to have more tests to conduct than an English cricket team.

5LW and 5GW went off to Cape Jaffa again for the Xmas holidays and mixed radio (on 40 and 6) and the crash with varying success. Wm in QSO with 5BL (Gordon) the other day, and he was quite a while in telling me that he always read the VK5 notes, and he also said quite a lot of nice things about the bloke who writes them. I was so overcome with modesty, Charlie, that I was not game to tell you that I was the culprit, but thanks to all the scribbles you meet.

Well my cup of happiness is filled to the brim, why? Because the Editor of this magazine sent me a Xmas card. Talk about walking on air, why I would be the first person to put a high just because of it, a lowly person like me receiving a card from such a high personage like the Editor. Jokes aside Tom many thanks, and the wishes are reciprocated heartily, although I must admit I am looking for the "click" or "crack" connected with the front page, hi, hi.

Listening on the air and from conversations with other Hams that I have had, convinces me that we are a very touchy mob of chaps. Praise our signals, pat us on the back, tell us up at the top of our voices to do this or do that, and we will reckon you are the best fellow in the world, but, and believe me it is a big but, just say the slightest word about our overmodulation, our sainine habits on the air, our general selfishness and we will consider for the other fellow, and look out, we will knock up our power and make an endeavour to alibi ourselves out of your accusations, we will descend to any depths. The "Old Man" has probably discovered this peculiar fact by now, and while I hold no brief for him (if he blusters and yells and carries on like a bunch of cowards with the least of them) I will cry photons with the loudest of them.

5XU, our genial Treasurer, has resigned from the Xmas Dept. and has accepted a position of science master at Prince Alfred College in the new year. Gordon is one of those serious minded coves who tackles all and any job with determination and sees them through to the bitter end and deserves any breath that comes his way. Best of luck to him, and good Gordon, and at least I can always say that I know you when! Incidentally, have they a pipe organ or a wurlitzer at Prince's, you little devil you?

5WM, the man with the pipe is sporting a little beard at the moment, and has decided to let his knees in a series of curves and twists, and does it pong? Well, as he walks down the street, strong men faint, dogs howl, women clutch their children, and quite often the police call out the fire brigade, fair dinkum.

Speaking of "The Old Man" earlier, and his philosophy, I am sure that one time stalwart of Amateur Radio, Major Macmillan, has not long since passed on, but I remember one night after a general meeting, a bunch of the boys were debating on the footpath as to which was the most important, the aerial, the receiver or the transmitter. The aerial was last, furiously and at last we appealed to Major to settle it. In his usual quiet manner he just paused, and then he said, "which is the most important leg of a three-legged stool." The argument came to a decided stop, and several of the most ardent individuals were highly convinced that there were many sides to Amateur Radio beside their own.

Members of the Advisory Council in all States attended their last meeting this month (December) and even in the obvious results of their work are visible. The Council also decided to please that a body of fellow Hams have been prepared to give up a good deal of their valuable time to act as buffers between them and the Department. Personally, I make the suggestion that next year's Council could consist of Hams who have, at some time or other, assisted the work of the Advisory Council. Better we get "Pro-forma" from the Council, than a kick in the pants from the Dept.

My old sparing partner, 5BZ, has been reported as being a little off colour, but I met him the other day and am pleased to say that he was not quite OK. He agreed to let us see that you are sparkling on all six in case 5BZ is not available at the moment and is mixing gardening and swimming at the time of writing. Jack was Father Xmas at the 5DS' staff party, recently and did a great job. He even produced a cardboard box with the proof that the pony had been with him for a little while, but I still don't believe him. Anyway that would have done with a pony. Don't answer that.

5JA was very surprised on the morning of 4/12/49 to hear some VK4 signs on his six metre receiver which were R3 S9 so times, and John thinks that he also heard some VK6 signs as well, but they were too weak to copy. Mr. Gordon heard of us being getting enough tubing together to make a 20 metre beam. Not another aerial Stewart? VK5 has been getting the most out of his 16 metres up to now. Yanks on 40 metre up. Nice voice. 5BZ is SFD in 5BZ and is on the air since shifting to his new location about three times. This shifting business takes time, doesn't it John. 5TW has been building new test equipment and also had the misfortune to lose his work bench quite recently. What did you say Tom? 5CH has just built a new frequency meter and has the job of calibration. It is in front of him. Claude's new transmitter is at last finished as the QRN should increase now. 4CJ, who is my highly paid spy from the South East, is a proud father of a son, 5CJ.

The only information that I have not received is the harmonic's name, what about it Col.

One of his "friends" suggested that he would probably work a lot of DX in the early hours of the morning.

Heard Bert Winter (5DR) on the air with telephony on 40 metres the other day, welcome Bert, and hope that we meet up some day.

I have always had a nasty suspicion that the Secretary and the President of the VK5 Division of the W.A. sometimes tell the whole white lie and at last, after many years of checking up on their statements, I am in the position to produce indubitable proof of their double dealings. I realise that this statement is a dangerous one, but I am going to stand by it. My proof is a written one and can be shown at the next meeting of the Division to them who were invited to the I.R.E. Xmas Social, and I have their word that they were definitely present yet in a prominent trade magazine is a write-up of the gathering which includes a list of the importers, dealers, and friends and "Dad" mentioned, no sir, they did. If the Hams had been asked, don't you think that the I.R.E. would have said no, sir, they wouldn't have, I mean yes sir, they would have. Do you require any more proof? Take my word for it Parsons the Perfect President. I am an ordinary mortal, and I am sure you have to have carried me away. My apologies follows.

Dr. Ross Adey (5AJ) left for England recently and our good wishes go with him. He is a real good soul and we are sorry to see him leave VK5, and I hope he will have the privilege of working him under a G call sign. During his sojourn in G land I will endeavour to reduce my girth and when he returns he will not be able to tell me that I am a sitter for "vermin" or something. I presented my to a certain picture theatre out at Prospect and he had a certain picture ticket on the stub. I think he had a certain picture ticket the other night when right in the middle of a pantomime scene the heroine, instead of saying indignantly "NO" to the hero's blandishments, said instead "Hello" to the hero's blandishments, and instead "Hello" VK5ZL, hullo VK5ZL, this is VK5ZL call sign, I am on the air, this is the audience, having had all it could stand, started to waltz out in great chunks by the way was covered in great chunks by the hysterical projection staff and management to whom the mere mention of the radio "Radio Amateur" is sufficient to cause their blood pressure to rise to 40 db over 99. How could you Ron?

Had a visit recently from VK2ANR who seemed to be enjoying himself in the fair city of Adelaide. He had shown the rest of the best broadcasting station in VK5, met the rest of the gang who were on duty, and chatted to us whilst we toiled at our various highly skilled experiments! He seemed amazed when the other boy arrived to throw water on my face to revive me because I had been working too hard, although I assured him that this was not always necessary as I often came around unaided. Norm seemed a good scout and we were all very pleased to meet him. We tactfully searched as he left, to no avail, as our lathe is still missing.

5XK writes to say that there has been an increase of one hundred per cent. in transmitters on Kangaroo Island, his own and that of Bert Winter, to whom I referred in an earlier paragraph. Arch, a man many of the boys mentioned the call sign of 5DR and the fact that he had been receiving a few discreet enquiries from a reliable source, and was informed that it is quite possible for a broadcast station and an Amateur to have the same call, but the broadcast station does not have the power. All right, here comes the enquiry. Thanks for the greeting, Arch and Bert, what about putting me in on those W and VE contacts that I hear giving you R5 and S9. Don't be greedy Arch.

Haven't heard 5LH lately, we will have to start the Bureau of Missing Hams working on the mystery. 5AX has gone to Mt. Gambier for a trip, so we might hear him from one of the South East stations. 5AL has just come back from a new receiver which, from all accounts, is going to be a "super-dooper". Heard 5RJ tied up in the Northern Test the other Sunday, and his mike cable was tied up in a youngster's playground and he was forced to sit all over the room to the said youngster's enjoyment. 5MA is also busy putting up aerials, possibly with the idea of cornering some of the DX I hear about, but seldom see. 5UX was heard portable on the River Torrens with a Type 3 receiver. 5VH is also reported as being in work. Len 5PH has a new 12 tube Bende resistor. I'll bet that took a few notes off of the corner. Perc 5VH is also reported as a missing person, therefore he cannot be given any publicity this month. Many thanks Perc. For the notes, keep up the good work.

Jack Combe is spending a holiday at American River, and is using a portable with the call sign VK5MR/P, and this makes three transmitters on Kangaroo Island. Quite a gaudy month for the mousiepups (very funny, very funny). Was snooping the other night trying to get some news from the cove boys, and I think I heard 5GQ between 6WZ and 5MD. Nearest approach to commercial working that I have heard follows, but the part that I liked was the remark that the better three quarters of 6WZ was a keen reader of mine. My amateur and other interests will be well served by 5WZ. I received recently a QSL card from 7RM in which he accused me of being the "Old Man." Rupert have you forgotten that there is such a thing as the law of libel. The only thing in your mind is that you have been accused of several crimes lately, and therefore I take the opportunity of now publicly denying such an aspersion. Convinced "Koop."

WESTERN AUSTRALIA

There having been no December meeting of the W.A. Division, there is naturally little to comment on official quarters. Frequent observations on the various radio stations in the state indicate that at least the majority of VK5s had an enjoyable time at Xmas. As we are beginning a new year in Amateur Radio and it being the usual time for formulating resolutions, we may or may not address remarks to the following observations may be considered relevant.

A considerable number of Amateurs these days are keen participants in a headlong race to qualify for admission to that exclusive fraternity having as its entry fee a contribution of one thousand dollars American and a hundred different countries. While this is a laudable ambition providing a deal of satisfaction to the persons fortunate enough to make the grade there are some who take it just a bit too seriously and cannot waste time in a QSO in case they are "one up" on the QSOs and QSLs, a boring pattern of "RST over, px, pax, QSL and 73." They are always in a hurry to squeeze in a few more QSOs while the band is open. In this way they miss a deal of the satisfaction to be derived from actually knowing the particular behind the call sign. A little time spent in really getting to know the Amateur himself and not just the call sign adds enjoyment to this hobby of ours. As to the coveted 100 countries, they'll mount up in time. Anyway when you have them, what then? Probably you'll set to and start to have a few real QSOs!

PERSONALITIES

6R4 busy settling down in his new QTH, couldn't get the radio to sing, so he went looking for that beam. Jim hooked his 513 to the closest antenna and landed an AC3. Did it dry the clothes faster? Jim! Another experimenter at heart is 6PJ. He tried dropping his xtal mike—it didn't bounce! Also missed a xtal mike is 6RS, due to an over inquisitive question from his mechanic making a reconnaissance around the shack.

Ever-persistent ten metres has a good gathering of locals these days. Included are 6LL, 6GM, 6JW, 6NA, 6LM and a few spasmodic visitors. Heard 6FB being answered on ten so has given the green light again. A highlight of the six metre activity was 6BW's first contact, ZL115's Xmas. Nice work Don. Apparently the a.e.s. has reached Bruce Rock as 6DW has high power on all bands now.

Breaking a long silence, 6AK was heard exchanging seasonal greetings with the gang on 40 metres on Xmas Day. 6WZ failed to be likewise but found his transceiver to an open in his ribbon feeder, Harry had to wait for several days till 6CN arrived and between them they narrowed the break down to six inches, then strapped it. After a few trials of brass knobs, then installed a cathode modulation for Xmas. 6WZ broke the 7 Mc. silence from Albany on Xmas Day with tales of great doings on six metres. 6WZ's receiver

RED  LINE
EQUIPMENT

**Matched
Transformer
KITS**
for all classes of
Electronic
Equipment

RED LINE Specialise in Audio Frequency Transformers up to Frequency Modulation Standards; Power Transformers up to 2 KW. rating. But—see RED LINE for Transformers of ANY specification, whether for Industrial Applications, Electronic Controls, Broadcasting, Amateur Transmitting or Public Address Systems.

**Professional Equipment
for the Amateur—**

We are Specialists in the design and manufacture of Communication Equipment, Industrial Transformers and Chokes, and Fluorescent Lighting Auxiliary Equipment. Unlike most manufacturers in this field, we operate our own tool room, press shop and laboratory and this close integration of our internal organisation is of particular value to manufacturers using our products.

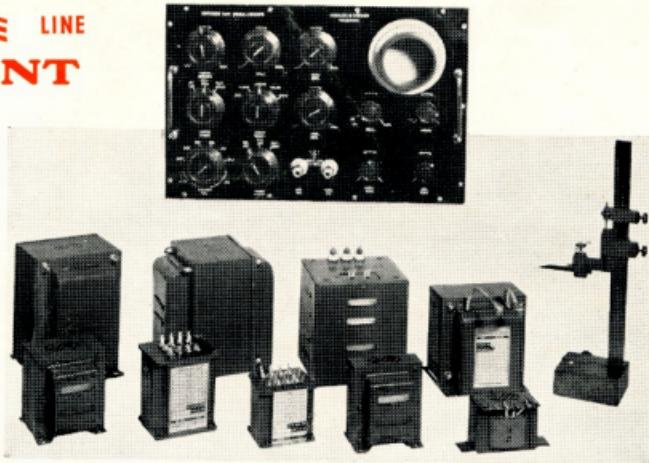
A GUARANTEE

OF
DEPENDABILITY

**Precision in Design
and Construction**

Veall's Electrical & Radio Pty. Ltd. Homecrafts Pty. Ltd.
Pty. Ltd. Radio Parts Pty. Ltd.
Arthur J. Veall Pty. Ltd.

NEW SOUTH WALES: U.R.D. Pty. Ltd. B. Martin Pty. Ltd.
Homecrafts Ltd. A. E. Harrold.



- Multi Impedance Modulation Transformers.
- Class B Driver Transformers.
- Swinging and Smoothing Chokes.
- Wide Range Audio Equipment.
- Frequency Dividing Networks.
- Power Transformers.
- High Tension Plate Transformers.
- Low Tension Filament Supplies[®]
- Heavy Duty Power Supplies.
- Output Transformers.

[®]Insulated for High Voltage if required.

RED LINE EQUIPMENT Pty. Ltd.

CITY OFFICE: MU 6895 (3 lines), 157 Elizabeth St., Melbourne
WORKSHOP: Central 4773, 2 Coates Lane, Melbourne.

VICTORIAN DISTRIBUTORS:

Howard Radio Ltd.
A. G. Healing Ltd.

Healings Pty. Ltd.
Motor Spares Ltd.

Warburton Franki Ltd.
Lawrence & Hanson Ltd.

INTERSTATE DISTRIBUTORS:

Denradio Industries
(Maryborough).
J. Michelmore & Co.
(Mackay).

SOUTH AUST.:
Gerard & Goodman Ltd.
Newton McLaren Ltd.
Unbehaun & Johnstone Ltd.

**Radio Wholesalers,
TASMANIA:**
Lawrence & Hanson Ltd.
Noyes Bros. (Aust.) Ltd.

1 AEGIS 2-STAGE D/W COIL ASSEMBLY featuring Permeabil- ity iron-cored B/C and SW coils.

2 AEGIS BROADCAST COILS cover the full range of standard types, plus special windings as required.

3 AEGIS INTERMEDI- ATES — range of 26 types including the new 10.7 megs. for Frequency Modulation.

4 AEGIS TUNING AND INSTRUMENT KNOBS all sizes and types including Vernier drive.

5 AEGIS CERAMIC INSULATORS. Full range of stand-off and feed-through types for all needs.

6 AEGIS RESISTOR STRIPS 48 lug, 24 lug and 6 lug (with upright mounting lugs).

7 AEGIS RADIO FRE- QUENCY CHOKES. Honeycomb wound on special ceramic rods — 4 pye, 1 pye and 4 pye tapered.

8 AEGIS TUNING POINTER in black bakelite with metal insert. Knobs for all occasions.

9 AEGIS IN- DICATOR PLATE — bright on black background, calibrated 0-180 K.C. — many other types to choose from.



AEGIS COMPONENTS

AEGIS MANUFACTURING CO. PTY. LTD., 208 LT. LONSDALE ST., MELBOURNE, VIC.

Distributors:

MELBOURNE—
Lawrence & Hanson Electrical
Pty. Ltd.
Replacement Parts Pty. Ltd.
Veals Electrical and Radio
Pty. Ltd.
Hercrafts Pty. Ltd.
J. H. McGrath & Co.
John Martin Electrical and
Radio Co.

SYDNEY—
John Martin Pty. Ltd.
Geo. Brown & Co. Pty. Ltd.
Fox & Macgillycuddy Ltd.
Australian General Electric
Domestic Factors.
Hercrafts Pty. Ltd.
PERTH—
Nicholsons Ltd.
A. J. Wyle.

ADELAIDE—
Geo. Procter (Factory Rep.).
Newton, McLaren Ltd.
A. G. Healing Ltd.
Harris, Scarfe Ltd.
Oliver J. Nilsen & Co. Ltd.
Gerard & Goodman Ltd.
Unbehauen & Johnstone Ltd.

BRISBANE—
Chandlers Pty. Ltd.
B. Martin Pty. Ltd.
A. E. Herrold or
Carnach & Connan Pty. Ltd.
TASMANIA—
Lawrence & Hanson Electrical
Pty. Ltd. (Hobart).
Lawrence & Hanson Electrical
Pty. Ltd. (Launceston).